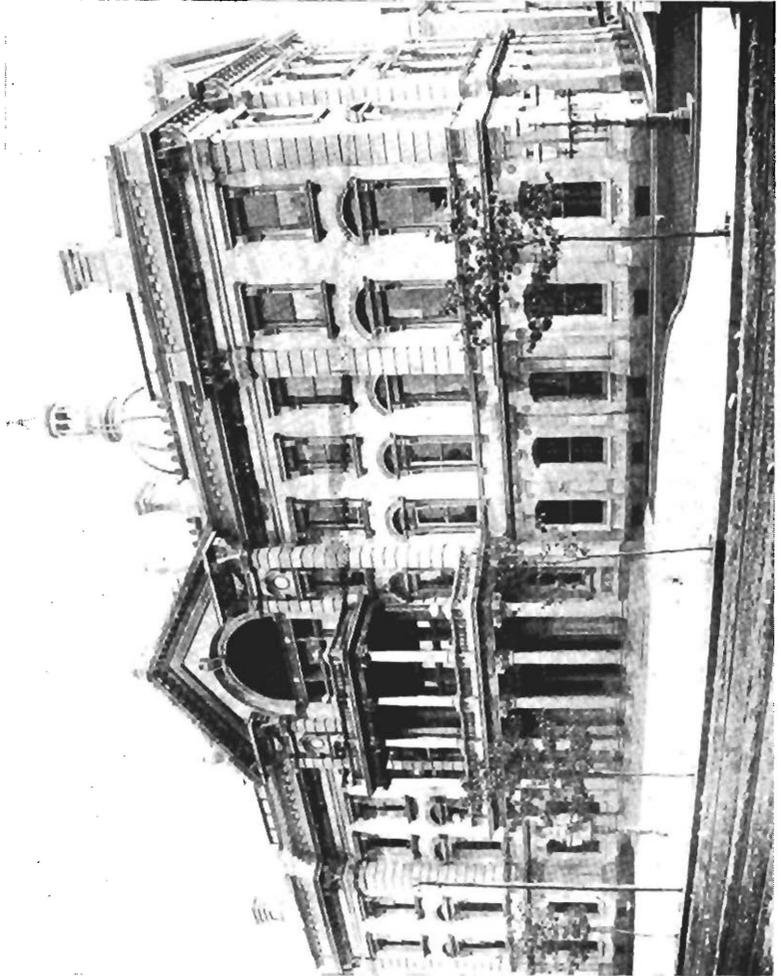


You Are Viewing an Archived Copy from the New Jersey State Library



Front View of State House, Trenton, New Jersey.

Document No. 37.

STATE OF NEW JERSEY.

TWENTY-SECOND ANNUAL REPORT

OF THE

State Board of Agriculture

1894-1895.

To the Governor and Legislature of New Jersey :

In accordance with the provisions of the act creating the State Board of Agriculture, adopted April 22d, 1884, I have the honor to present the annual report for 1894.

FRANKLIN DYE,
Secretary.

TRENTON, Mercer County, N. J., Feb. 24th, 1895.

(3)

STATE BOARD OF AGRICULTURE.

OFFICERS FOR 1895.

PRESIDENT.

HON. D. D. DENISE.....Freehold.

VICE PRESIDENT.

E. B. VOORHEES.....New Brunswick.

TREASURER.

WILLIAM R. WARD.....Newark.

SECRETARY.

FRANKLIN DYE.....Trenton.

EXECUTIVE COMMITTEE.

WM. R. LIPPINCOTT.....Fellowship.

THEO. F. D. BAKER.....Bridgeton.

B. R. CLIFFORD.....Delaware Station.

ALSO,

THE PRESIDENT, VICE PRESIDENT, SECRETARY AND TREASURER.

BOARD OF DIRECTORS

New Jersey State Board of Agriculture.

1895.

Term of office for all except the two year County Board Directors, from January 1st, 1895, to December 31st, 1895.

Class A.

EMMOR ROBERTS.....	Moorestown.....	Geological Survey.
RALPH EGE.....	Hopewell.....	} Board of Visitors, Agricultural College.
WILLIAM R. WARD.....	Newark.....	

Class B.

E. B. VOORHEES.....	New Brunswick...	Director of Experiment Station.
E. B. VOORHEES.....	New Brunswick...	Professor of Agriculture.
JOHN T. COX.....	Readington.....	Master of State Grange, P. of H.
M. D. DICKINSON.....	Woodstown.....	Secretary of State Grange, P. of H.

Class C.

P. T. QUINN.....	Newark.....	} State Agricultural Society.
THOMAS DAUSON.....	Newark.....	
DR. JOSEPH B. WARD.....	Lyons Farms.....	} State Horticultural Society.
CHARLES PARRY.....	Parry.....	
WILLIAM H. ELLIS.....	Crosswicks.....	} N. J. State Poultry Association.
CHARLES W. JOHNSON.....	Cranford.....	
J. J. WHITE.....	Juliestown.....	} American Cranberry Growers' Association.
A. J. RIDER.....	Trenton.....	
JOHN M. LIPPINCOTT.....	Moorestown.....	Burlington Pomona Grange.
W. W. DE CAMP.....	Roseland.....	Central District Pomona Grange.
ISAAC DEBBICKSON.....	Repaupo.....	Gloucester Pomona Grange.
I. H. HOFFMAN.....	Baptisttown.....	Hunterdon Pomona Grange.
D. C. MCGALLIARD.....	Trenton.....	Mercer Pomona Grange.
REEVES FLITCRAFT.....	Woodstown.....	Salem Pomona Grange.

BOARD OF DIRECTORS.

NAME.	ADDRESS.	TERM.	ASSOCIATION.
V. P. HOFFMAN.....	Egg Harbor City.....	2 years.....	} Atlantic County Board.
WILLIAM A. ELVINS.....	Hammonton.....	1 year.....	
CLAYTON CONROW.....	Cinnaminson.....	2 years.....	} Burlington County Board.
THOMAS J. BEANS.....	Moorestown.....	1 year.....	
R. COOPER MORGAN.....	Blackwood.....	2 years.....	} Camden County Board.
RUDOLPHUS BINGHAM.....	Camden.....	1 year.....	
H. L. SABSOVICH.....	Woodbine.....	2 years.....	} Cape May County Board.
DR. E. H. PHILLIPS.....	Cape May City.....	1 year.....	
W. O. GARRISON.....	Bridgeton.....	2 years.....	} Cumberland County Board.
F. S. NEWCOMB.....	Vineland.....	1 year.....	
F. C. GOBLE.....	Verona.....	2 years.....	} Essex County Board.
C. HENRY FARLEY.....	Livingston.....	1 year.....	
ALBERT HERITAGE.....	Swedesboro.....	2 years.....	} Gloucester County Board.
GEORGE W. F. GAUNT.....	Mullica Hill.....	1 year.....	
W. H. OPIE.....	Readington.....	2 years.....	} Hunterdon County Board.
JOSEPH HAGEMAN.....	Oakdale.....	1 year.....	
S. B. KETCHAM.....	Pennington.....	2 years.....	} Mercer County Board.
A. D. ANDERSON.....	Trenton.....	1 year.....	
SAMUEL BLISH.....	New Brunswick.....	2 years.....	} Middlesex County Board.
D. C. LEWIS.....	Cranbury.....	1 year.....	
HAL. ALLAIRE.....	Allaire.....	2 years.....	} Monmouth County Board.
WILLIAM H. REID.....	Tennent.....	1 year.....	
WILLIAM F. ELY.....	Madison.....	2 years.....	} Morris County Board.
J. A. CASTERLINE.....	Dover.....	1 year.....	
W. H. WOOD.....	Lanoka.....	2 years.....	} Ocean County Board.
CHARLES M. ROBER.....	Caseville.....	1 year.....	
M. T. M. GARRISON.....	Elmer.....	2 years.....	} Salem County Board.
CHARLES R. LOVELAND.....	Cohansey.....	1 year.....	
DAVID C. VOORHEES.....	Blawenburg.....	2 years.....	} Somerset County Board.
JOSEPH FITZGA.....	Somerville.....	1 year.....	
SIMEON D. PARCELL.....	Deckertown.....	2 years.....	} Sussex County Board.
J. A. McBRIDE.....	Unionville.....	1 year.....	
JOHN O. MAGIE.....	Elizabeth.....	2 years.....	} Union County Board.
F. E. WOODRUFF.....	Cranford.....	1 year.....	
JOHN T. OBBLEY.....	Broadway.....	2 years.....	} Warren County Board.
B. R. CLIFFORD.....	Delaware Station.....	1 year.....	

THE TWENTY-SECOND ANNUAL MEETING
OF THE
New Jersey State Board of Agriculture,
HELD IN THE
STATE HOUSE, TRENTON, N. J.,
Tuesday, Wednesday and Thursday,
JANUARY 15th, 16th and 17th, 1895.

You Are Viewing an Archived Copy from the New Jersey State Library

You Are Viewing an Archived Copy from the New Jersey State Library



EX-PRESIDENT EDWARD BURROUGH.
Died May 3d, 1895.

You Are Viewing an Archived Copy from the New Jersey State Library



Residence and Ancestral Home of the late Edward Burrough, near Merchantville, N. J.

You Are Viewing an Archived Copy from the New Jersey State Library

MINUTES OF THE TWENTY-SECOND ANNUAL MEETING.

FIRST DAY.

MORNING SESSION.

January 15th, 1895.

The Twenty-second Annual Session of the New Jersey State Board of Agriculture was called to order by ex-President Edward Burrough, acting Chairman, who said :

I desire to state that the Board of Visitors of the New Jersey State Experiment Station is holding its annual session this morning, and at the request of the Vice President of this Board, Professor Voorhees, I have called the meeting to order, with the understanding that when he is through he will take charge of your sessions.

The roll of members was then called as follows :

(See list, page 7.)

Mr. Rogers—I move to adopt the order of business as printed, with the addition of an hour to be fixed for the report of the Tuberculosis Commission, which has been omitted.

The Secretary—I would suggest that report be made to-morrow morning at 11:45 o'clock, following the dairy subject.

So ordered.

Reading of minutes of last annual meeting, as printed in the annual report, was omitted, and they were adopted as printed.

The Chair then announced the following committees :

On Credentials—M. D. Dickinson, Salem; Isaac H. Hoffman, Hunterdon; Samuel Blish, Middlesex.

On Resolutions—W. O. Garrison, Cumberland; D. C. Voorhees, Somerset; John T. Cox, Hunterdon.

On Legislation (Temporary)—Dr. Jos. B. Ward, Essex; Clayton Conrow, Burlington; W. H. Reed, Monmouth.

On Reports of Officers—I. W. Nicholson, Camden; Dr. E. H. Phillips, Cape May; Geo. W. F. Gaunt, Gloucester.

On motion of Charles Collins, a committee of three was appointed to wait on the Governor and invite him to attend the meetings of the Board.

The Chair named the following committee :

Messrs. Charles Collins, D. C. Lewis and Hon. H. J. Irick.

Mr. Ward—The members of this Board who are also members of the Board of Visitors to the College ask to be excused from attendance here, so they can attend the meeting of the Board of Visitors.

The Chair—If there is no objection they will be excused.

The report of the Executive Committee was presented and read by Secretary Dye.

The report was received and ordered to be printed.

EXECUTIVE COMMITTEE'S REPORT.

The Executive Committee has held ten meetings in the interest of the work of this Board during the year. At the first, February 8th, Dr. Ward, representing the Legislative Committee, was present for the purpose of advising with the Executive Committee in relation to resolutions passed by the Board which demanded legislative action. Concerning the resolutions on trespass, the Legislative Committee were authorized to employ legal assistance to draw a bill concerning resolution and to introduce the same into the Legislature.

As to publishing the laws in pamphlet, Dr. Ward was invited to request Hon. A. W. Cutler, of Morristown, to draft such a bill, inasmuch as the resolution emanated from the Morris County Board. In relation to the introduction of a bill as per resolution of Dr. Parry, on the subject of tuberculosis, the committee were not clear that a bill in the line of the resolution named would be to the advantage of the producers or consumers of beef or milk, but that in the case of milch cows a biological test of the milk should be made in connection with the physical examination and tuberculin test.

In this connection the following resolutions were adopted, and the Secretary was directed to send the same to the Secretary of Agriculture, the Hon. J. Sterling Morton :

“WHEREAS, Bovine tuberculosis is believed to exist to some degree in several of our States, we respectfully ask the Hon. J. Sterling Morton, Secretary of Agriculture, to consider whether it is not feasible for the United States Government, through the Department of Agriculture, to deal with it in a manner similar to that which was adopted as to pleuro-pneumonia.

Resolved, That whereas, a substance known as tuberculin is claimed to have special diagnostic value, we ask that a special commission be appointed to make full investigation as to it and such expert and extended tests of its value as scientific inquiry and practical observation demand.

Resolved further, That in connection with physical examination and tuberculin tests, as means of determining the existence of tuberculosis, biological tests for the same purpose be made with a view of determining *its* value.

Resolved, That a copy of these resolutions be transmitted to Hon. J. Sterling Morton, Secretary of Agriculture."

"STATE OF NEW JERSEY,
"OFFICE OF STATE BOARD OF AGRICULTURE, }
"TRENTON, February 19th, 1894. }

Hon. J. Sterling Morton, Secretary of Agriculture, Washington, D. C.:

"DEAR SIR—The Executive Committee of the New Jersey State Board of Agriculture, acting for themselves and the State Board, respectfully ask your consideration of the inclosed resolutions, with a view to favorable action thereon by the Department of Agriculture, if the way be clear.

"As the disease named seems to be increasing and spreading by importation from State to State, the importance of some concerted movement on safe lines for its control seems to be imperative, and this, in our judgment, can be most wisely and economically done by the Department.

"Very respectfully yours,

"FRANKLIN DYE,
"Secretary."

We have heard of no action on this question by the Department of Agriculture.

The committee at this meeting decided to publish a pamphlet on Agricultural Education, to include Prof. Voorhees' address before this Board at the last annual meeting, and the Secretary was authorized to print 5,000 copies for circulation as might be most conducive to the object in view. The resolution of the Board at the last annual meeting relating to the free delivery of rural mail matter was carried out, and the following communication was sent to the Post-master-General, and to our members of Congress:

"STATE OF NEW JERSEY,
"OFFICE OF STATE BOARD OF AGRICULTURE, }
"TRENTON, February 19th, 1894. }

"Believing that the farmers of the country should receive a just share with others in the benefits afforded by the government which they are taxed to support, and especially the privilege of a free delivery of mail matter now enjoyed by cities; therefore,

Resolved, That we, the members of the New Jersey State Board of Agriculture, respectfully request our Senators and Congressmen from this State to aid in establishing such a system of mail delivery for country residents of New Jersey, and that a duly-attested copy of this resolution be forwarded to our Senators and Congressmen.

“EDW. BURROUGH,
“President.
“FRANKLIN DYE,
“Secretary.”

The above is urged also for the reasons that the density of population and the improved road system of the State of New Jersey will warrant it.

And further that the delivery of mail matter in this State pays the government more than it costs.

This subject seems not to be worthy of further trial by the Post Office Department, but they recommend additional city facilities. The Secretary was also authorized to compile and print a pamphlet on the subject of Free Delivery of Rural Mail, to include Thos. J. Beans' Workingman's Plea, &c., edition to be composed of 2,500 copies. These were widely distributed.

The question of a text-book on agricultural education for use in the district schools of the State was discussed, whereupon the question was deferred to a subsequent meeting, and it was decided to write to the Executive Committee of the State Grange to confer with the Executive Committee of this Board concerning the matter. April 9th the joint meeting of the two committees was held, and after a general discussion of the question it was referred to a joint sub-committee of the two Executive Committees, to report at evening session. This committee took the following action:

Resolved, 1, That we heartily indorse the action that has been taken by the committees of the State Board of Agriculture and the State Grange, in reference to having an elementary course of agriculture taught in the common schools of our State.

Resolved, 2, That we have carefully examined the outlines of a book now in course of preparation by Prof. Voorhees, and recommend that the Executive Committee of the State Board of Agriculture and the State Grange indorse the work.

Resolved, 3, That a committee be appointed to bring the matter again before the State Board of Education, asking their indorsement of the publication.

Resolved, 4, That a committee be appointed to confer with publish-

ing-houses in reference to the cost of publication, with power to authorize the book published.

"E. B. VOORHEES,
"WM. R. LIPPINCOTT,
"GEORGE E. DE CAMP,
"GEORGE W. JESSUP."

The foregoing resolutions of the joint committee were unanimously adopted and the following committees were appointed to carry out the above action:

From the State Board—Messrs. Voorhees, Dye and Cox.

From the Grange—Messrs. Burrough, William B. Lippincott and Dickinson.

Worthy Master Cox then offered the views of the Executive Committee of the State Grange, as follows:

"Resolved, That the State Grange heartily indorse the adoption of agricultural education in the public schools, and that we also favor the publication of a text-book prepared by Prof. E. B. Voorhees, and will use every possible endeavor to secure its adoption and introduction in the public schools throughout the State.

"JOHN T. COX,
"JAMES H. BAIRD,
"M. D. DICKINSON,
"WM. B. LIPPINCOTT,
"GEO. E. DE CAMP,
"Executive Committee."

And the following was also adopted by your Executive Committee April 9th, 1894:

"Resolved, 1, That the Executive Committee of the State Board of Agriculture recommend the publication of a text-book on agriculture and indorse the book prepared by E. B. Voorhees.

"Resolved, 2, That the State Board of Agriculture, through its Executive Committee, use every reasonable effort to secure the introduction of this study in our public schools.

"FRANKLIN DYE,
"Secretary."

Pending the preparation of the text-book, no further action has been taken.

Concerning the action of the last annual meeting (see page 96) directing "that the Secretary of this Board engross a set of resolutions in the matter, and that the same be signed by the President and Secretary of the Board and be forwarded to Miss Jessie L. Colson for

her services at the World's Fair in our agricultural exhibit," the President and Secretary both made an effort to express the "feelings" of the Board in the matter, and the following resolutions were neatly executed and attractively framed, and at a meeting of the Executive Committee, held by invitation at the house of President Burrough, September 21st, at which Miss Colson was present by invitation of Mr. Burrough, the resolutions as engrossed were presented to Miss Colson by the President with a few remarks commendatory of the services of Miss Colson :

"At the annual meeting of the State Board of Agriculture of New Jersey, held at Trenton, N. J., January 17th, 18th and 19th, 1894, the following resolutions were unanimously adopted :

"*Resolved*, That the State Board of Agriculture fully appreciates the good judgment shown in the arrangement and care of our exhibits, the knowledge of our products and agricultural resources evinced by Miss Jessie L. Colson, and her ability and readiness to communicate that knowledge to visitors, and regard the selection by the President of a farmer's daughter as Superintendent of the Agricultural Pavilion of New Jersey as a wise one.

"*Resolved*, That the thanks of this Board are hereby tendered to Miss Jessie L. Colson for her efficient services, and that a copy of these resolutions be suitably engrossed and signed by the officers of the Board and presented to Miss Colson as a further testimonial of our regard."

" E. B. VOORHEES,
 " W. R. LIPPINCOTT,
 " D. D. DENISE,
 " THEO. F. D. BAKER,
 " H. F. BODINE,
 " EDWD. BURROUGH,
 " FRANKLIN DYE,
 " Executive Committee."

The testimonial was appreciated by Miss Colson, as expressed in a brief address acknowledging the same, as follows :

"*Mr. President, Members of the Executive Committee, Ladies and Gentlemen*—This is a very great surprise to me. I suppose it should not have been, since your Secretary has just read Mr. Nicholson's motion from the State Agricultural Report. I have been presented with a copy of that valuable work and have read it with a great deal of pleasure and profit.

"Expressions of approval and appreciation of my management of the New Jersey Agricultural Exhibit during the fair have been expressed. I feel that this recognition from the State Board is more than I deserve, for naturally mistakes were made, because it was impossible to have had any experience. I therefore thank Mr. Nichol-

son for his motion and the State Board for having approved it. While I am very grateful for all that has been said, I am particularly grateful for this written testimony, for spoken words are like flowers—they fade and soon pass away.

“These resolutions, so beautifully engrossed and harmoniously framed, I assure you will be appreciated, not only by my family and myself, but also by the Naturalists’ Field Club and all those who helped me with the Pagoda, the forerunner of all that followed in my World’s Fair experiences. I therefore thank the State Board of Agriculture, in the name of the Naturalists’ Field Club, my friends, parents and myself, for this handsome token of their appreciation.”

At this meeting the President presented to the Executive Committee his resignation as President of the New Jersey State Board of Agriculture, in the following communication :

“MERCHANTVILLE, N. J., 9th mo. 20th, 1894.

“*To the Executive Committee of the State Board of Agriculture :*

“GENTLEMEN—I herewith tender to you, and through you to the State Board of Agriculture, my resignation of the office of President of said Board, and respectfully ask its acceptance, to take effect immediately, or at such time as will least embarrass you and the operations of the Board.

“Very truly and obediently yours,

“EDWARD BURROUGH.”

The committee received the communication, and, pending action thereupon, took a short recess for dinner. Resuming business, the Executive Committee, after due consideration, unanimously accepted the resignation of President Burrough, under the following action :

“*Resolved*, That the resignation of the President of this Board, Hon. Edward Burrough, be accepted, to take effect the 1st day of November next, with the understanding that he make his annual report to the State Board as heretofore, either in writing or verbally.”

The committee then passed the following :

“**WHEREAS**, In view of the long-continued and faithful services of Edward Burrough as President of the New Jersey State Board of Agriculture, now, at his request, about to end,

“*Resolved*, 1, That we hereby express our emphatic appreciation of the gratuitous work done by him in furthering the work of the State Board and of the agricultural interests of the State.

“*Resolved*, 2, That we consider the farming business and the farmers of the State to have both been brought into greater prominence and influence by the untiring efforts and watchfulness of President Burrough during his official connection with this Board.

Resolved, 3, That the members of the Executive Committee hereby express their high appreciation of Mr. Burrough both as a citizen, as a member of this committee and as our presiding officer; as chairman both of this committee and of the State Board, his rulings have been honorable; he has endeavored at all times to accord to each member a hearing, and to all, justice.

Resolved, 4, That we extend to him and his family our best wishes for a continuous prosperous life, a peaceful old age and a blessed hereafter."

Unanimously agreed to.

Owing to the numerous applications of companies for the right of way for trolley or electric roads through farming regions, the following circular was published by the committee. It explains itself. Numerous applications have been made for additional copies. The circular seems to have met a need:

"TO FARMERS AND OTHER INTERESTED PARTIES.

"OFFICE STATE BOARD OF AGRICULTURE,
"TRENTON, N. J., October 22d, 1894.

"The advent of electricity as a motive power has caused the formation of traction and other companies who are desirous of extending their lines and tracks into the rural districts of the State. There is no desire or wish to prevent the progress of improvements in such districts, much less to retard improved methods of transportation, but there are a few points of general interest and of such importance to landowners that we feel called upon to direct their attention to a careful examination of what privileges are asked of them and what the results arising therefrom may be.

First. Grant no privileges for the laying of any traction or passenger railroad tracks on or across your premises that has a less gauge than *five feet two inches* between the inside edges of the rails, thus making the width conform to the width of the vehicles, heavy and light, that are in common use throughout the State. If this is not done the damage to those who thus divide the use of the roadway to traction companies will be continuous. Further, see that the rails have at least four inches flange and that the space between the rails, wherever laid upon or across public roads or highways, be paved or macadamized, and that said pavement or macadam road-bed extend at least fifteen inches on the outside of the rails and be laid in such manner as to allow a free and easy crossing of such rails or tracks.

Second. Before signing any paper for granting the right of way or other privilege, have it carefully examined, to see that you do not sign a warrantee deed or privileges that will allow the company obtaining the same to transfer the rights granted for other purposes than you intend to convey, and use the same caution in granting

privileges for the planting or setting of telephone, telegraph and electric light poles.

"*Third.* Bring your influence to bear upon your township, borough, county and State authorities, to have them protect your interest in these matters.

"*Fourth.* Interview your candidates for Township Committee, Chosen Freeholder and members of the Legislature, and have them agree to protect your interest in case matters of this nature come before them. By securing the above-mentioned rails and gauge and maintaining your rights you will not only benefit yourselves, but protect the general traveling public from unnecessary and extraordinary wear, tear and damage to their vehicles. The need of this has been fully demonstrated in some parts of the State where a traction gauge of five feet has been laid upon a main public thoroughfare.

"By order of the Executive Committee.

"EDW'D BURROUGH,
"President.

"FRANKLIN DYE,
"Secretary."

"NOTE.—Since writing the above, the following article on this subject appears in the 'Farmer's Friend,' of Mechanicsburg, Pa., and it is inserted here as showing the general interest in and importance of this question:

"ELECTRIC RAILWAYS.

"The 'Friend' has on several occasions heretofore called attention to the wrongs inflicted upon communities by the granting of the public roads for the use of electric lines of railways. The highways were constructed for the benefit of the people in the course of ordinary intercommunication and must necessarily be protected from danger from any and all sources. Anything that jeopardizes the safety of those who are compelled to use the public roads, defeats, to a certain extent, the object for which these highways were built. Blind, indeed, must be the individual who does not see that building an electric railway along one side of a public road makes it dangerous for those who are compelled to travel the other side of the same highway with vehicles indispensable to successful farm operations, and selfish must be he who for personal gain would impair and render almost useless for the purposes intended those thoroughfares. We do not think that any resident of a rural district could, after mature reflection and due consideration of the dangers involved, consent to see a public road so used, and to prevent this will require the strong, outspoken opposition of those most directly concerned, who would necessarily be the greatest sufferers.

"Under the present law it is in the power of township supervisors to grant the right of way over the public roads in their respective townships, and the highways once occupied and built upon by a corporation for this purpose may be so held for an indefinite period.

"It is now generally understood that a statute will be passed by

the next Legislature giving companies desiring to build electric roads the right of eminent domain, which, while encouraging the building of these lines, will compel them to obtain their right of way without interfering with the public roads, or in case of interference in crossing or tunneling to so protect the public highway as to secure the safety of the people at the expense of the companies. This will be just legislation, and will be appreciated by those who for business or pleasure drive through the country. We are favorable to trolley lines. They are a great accommodation to the greater portion of the rural population, but they should be so located as not to interfere with the rights and immunities of others. Trolley lines, like all other railroads, are built not simply for public accommodation, but rather as paying investments for the owners, and as they can as well afford to purchase the right of way as steam railway companies are compelled to do, they should not be permitted to destroy or interfere with our public highways.

"It is understood that some projectors of trolley lines, knowing that their plans of getting possession of highways through the permission of supervisors will likely be interfered with at an early day, are now preparing to secure these rights in advance of the action of the Legislature. Citizens of townships, and especially farmers, should see to it that their supervisors protect them in their rights. Electric railway investors may desire to build, but let these investors purchase the right of way, as other corporations and individuals in other lines of business are compelled to do."

The report of President Burróugh as Superintendent and Manager of the Agricultural Exhibits of this State at the Columbian Exposition, was presented to the Executive Committee, and as it covers a work done by direction of this Board (see report of 1891-92, page 383), it will be printed in the annual report in its proper place.

APPROPRIATIONS AND INSTITUTES.

The committee again as last year appropriated \$100 to aid in the publication of the State Weather and Crop Bulletin, by which assistance it was published in a neater and more attractive form than formerly. The usual annual appropriation to the State Horticultural Society of \$300 has been made, and a total of \$813 to the County Boards. There has been also expended for special Institute work in ten counties a total of \$375 up to this date, and the Executive Committee have authorized the Secretary to hold ten additional Institutes to follow immediately after the annual meeting.

In this connection we would state that the Farmers' Institute and lecture-work under the direction of the Executive Committee and conducted by the Secretary is becoming more and more popular and

MINUTES OF ANNUAL MEETING. 21

useful. Farmers who are at all progressive in thought and practice find these Institutes a helpful means to more intelligent and profitable work.

These, in connection with the County Board meetings and the Extension Lectures, under the management of Prof. Louis Bevier, Jr., of Rutgers Scientific School, give such opportunity to present and prospective farmers for improvement as will place the agricultural and horticultural interests of the State on a more productive and profitable plane in the near future, thus adding to the annual wealth of the State a sum many times larger than the slight appropriation.

Mr. John G. Griffith, of Hoboken, made application to the Executive Committee for admission to the New York College of Veterinary Surgeons last November, having very flattering testimonials as to character and fitness.

In writing him our Secretary stated "If your application be accepted we will look for you to do honor to the profession, the Board that has appointed you and the State from which you come, and a letter occasionally as to your progress, will be acceptable."

In his answer to the Secretary's letter to the Faculty, the Secretary, Dr. George P. Biggs, said: "In reply to your letter of November 13th, regarding a scholarship in the college, I have to report that it was abolished some time since. But in view of the facts in Mr. Griffith's case, we have made him a proposition whereby he will be enabled to begin his course this year, and he has accepted it."

COMMITTEES

Were appointed to visit certain agricultural exhibitions in order to glean information that might be helpful in the way of contrast between the products of different sections of this State, and also of adjoining States. The committee appointed to visit the Toronto Fair, Canada, will report personally.

Your committee realize that the past year has not been more prosperous than its predecessor, 1893, to the agriculturists of the State, if indeed as encouraging. The causes contributing to decreased profits are known to the members of this Board. If there is a remedy for any of them it is for you to discover and apply.

Discouragements exist in every calling, and agriculture is no exception. The effort to overcome adverse influences, however, whether of debt, taxation or decreased profit, by intelligence and united efforts, will, we believe, bring relief.

Usually the place to find a thing is where it was lost. So it may be possible in farming to regain much that has been lost by poor management, through the application of improved methods and more advanced ideas.

ANNUAL MEETING.

This has been arranged for with the desire to keep this Board in the lead amongst kindred State organizations, and to present such subjects for your consideration as we believe would be valuable to consider and profitable to practice.

The gentlemen called to open the subjects placed upon the programme are at the front on the subjects they will treat. As you will notice, six States have been laid under tribute to prepare and present this our annual feast of agricultural and horticultural thought. Let discussion freely follow each paper, in order that the united experience thus brought together may be all the more practical and helpful. Our desire is that this meeting shall not fall behind any of its predecessors in the helpful influence it shall exert for the prosperity of the farmers of New Jersey and the agricultural interests they represent.

Respectfully submitted by your

EXECUTIVE COMMITTEE.

Dr. Ward, for the Committee on Legislation, reported as follows :

Mr. President and Members of the State Board—Another year has passed since last we convened in these legislative halls, and again we meet to take counsel of each other in the successes and failures of the past season, to discuss those questions that are of vital interest to farmers, and to hear from those who have far more experience and knowledge than we possess how best we may pursue our chosen vocation with greater profit and more enjoyment, learning how to grow two blades of grass where but one grew before.

As members of the Legislative Committee, it is necessary that we give an account of the stewardship intrusted to our care. Perhaps it might have met with better success in other hands. We have tried to do our work manfully and well, meeting with many discouragements and some successes. We recognize the responsibility placed upon us, and carefully watched all legislation pertaining to the farming interest of the State, and during the winter introduced and assisted in the passage of several bills of the utmost importance not only to the farmers but to this State Board of Agriculture.

Assembly 89, an act for the preservation of sheep, the old Dog law that has so often been before this Board for discussion, was introduced and passed through the exertion of Hon. D. D. Denise. This is now a law, and is working very satisfactorily throughout the State where enforced.

Assembly 161, an act to enable township committees, or the governing boards of any boroughs, towns, villages, or improvement associations in towns and villages, or within townships in this State, to pass and enforce their ordinances respecting the use of broad tires on wagons and carts upon their macadamized public streets, and to collect the penalty for the violation thereof, became a law. As we reported last year, "With our improved stone roads, we must resort to broad tires. Remember the French adage, '*That* wagon should make that road and not that rut.'" "

Assembly 253, the bill indorsed by the State Horticultural Society, to prevent depredations by insects injurious to the agriculturist, was opposed because it gave the State Board of Agriculture the right to dictate to the farmers how they should run their farms. This bill was defeated, re-introduced and the second time defeated. It seems to us that this is a very important measure and should secure more than ordinary attention, not waiting until the horse is stolen before the barn door is locked.

At the last annual meeting of the State Board the following resolution was adopted :

"Resolved, That we secure the passage of a law providing for the appointment of a committee of five by the President of the State Board of Agriculture, to serve without compensation, this committee to have authority to inspect herds of cattle when called upon by the owners to do so, and to inspect the herds of others when called upon by the State Dairy Commissioner to do so, if necessary for the detection of tuberculous herds."

At the proper time, and after a good deal of discussion, a bill was drafted on the lines of the resolution and introduced into the Legislature, known as House Bill No. 363. It was somewhat imperfect, but your committee thought it would be better not to ask for too much. As it was, our bill met with a good deal of opposition. Shortly after our bill, another, known as House Bill 389, was introduced by Hon. Mr. Storrs. The provisions of this bill were sweeping and gave to the veterinarians unlimited powers and rights. They could go almost where they pleased, and do as they pleased, at the expense of \$5 per

day to the State of New Jersey. They would meet once a month, which would cost in itself about \$800 to pay the per diem and mileage. They could kill cattle indiscriminately, which would cause a large expense to the State. With this bill before the Legislature, and the active support it secured from those behind it, it seemed for a time as if our bill would be swamped, but through the exertion of Hon. D. D. Denise it finally passed the House.

In the Senate it also met with much opposition. At first it seemed to have clear sailing, but suddenly Senator Adrain offered as a substitute for our bill, 389. He considered Bill 363 a defective and rotten measure, and he opposed it because it was a measure of the utmost importance to every one in the State. He took issue with the provisions of the bill, in that the commissioners to be appointed under the act were not to be made up of men sufficiently skilled in the detection of this disease, namely, President of Board of Agriculture and five farmers. Finding that our bill was likely to be defeated, we had it recommitted and referred back to the committee, so that we might explain its merits. At the hearing a number of Senators, besides members of the committee, were present and seemed to take much interest in the subject by frequently asking questions. At this hearing the State Board was represented by Dr. W. C. Parry, of Burlington; Wm. Bishop, of Monmouth; Chas. Collins and Dr. J. B. Ward. We satisfied the committee that our bill was drawn on correct lines, that would not only protect the interests of the farmers but the health of the general public. If farmers were not competent to select veterinarians who would be able to detect and combat this disease, where could they be found? The bill was reported back to the Senate, with the favorable recommendation of the committee, and finally, after slight amendments, was passed. His Excellency the Governor signing it soon after its passage, it became a law. The President of the State Board appointed the commissioners, who will doubtless report to this body sometime during the session.

The repeal of the Township Road law appeared in several forms, both in the House and Senate, but was defeated. This law should be better understood, not only by the farmers but by Township Committees; then its enforcement would be more satisfactory to all concerned.

The most difficult problem before the committee was the solution of the question how to divorce the Stone Road law from the State Board.

We had in mind the resolution offered at our last meeting—that it is the sense of this State Board of Agriculture that the duties of

the Road Commissioner should be performed by some one other than the President of the State Board, and that our Legislative Committee be instructed to use their efforts to secure the necessary legislation to bring about the divorcement. And yet, while interviewing leading legislators, so as to carry out the spirit of the resolution, we found them bitterly opposed to creating any new commissions. And yet, on the other hand, it was frequently stated that the State Board was getting into politics. The State Road law was causing dissension among the farmers. While in many counties all were in favor of it, in portions of others there was bitter opposition, which was reacting against the Board. Something had to be done or permanent division would ensue, whereby the usefulness of the Board and its work would be greatly impaired. At last a bill was drawn creating a Commissioner of Roads, but, instead of attaching a salary, a per diem compensation was added. This seemed to meet the objections of those opposed, and the bill was passed, becoming a law during the last days of the Legislature.

Under this act the Governor appointed a State Road Commissioner, who will hold his office for the term of three years.

The old Latin maxim, "*Perseverentia vincet omnia*," was fully realized last winter, when, after so many attempts, your committee secured the passage of an act enabling the State to have a portrait of the late Prof. Geo. H. Cook painted, and, we hope, soon to be placed somewhere upon the walls of this magnificent building, among other men honored of the State.

The report was received and committee discharged with the thanks of the Board.

Mr. John T. Cox, Master, reported for the State Grange. (See report.)

The report was received and ordered published in the annual report of the Board.

The Secretary presented a communication in regard to the coming exposition at Atlanta, Ga., requesting that New Jersey make a leaf tobacco exhibit. The Secretary remarked—I know there are tobacco-growers in the northern portion of this State, and it might be well for them to take up the question, looking to an exhibit in this line.

The Secretary also read a letter from ex-Governor Hoard, sending greetings to the Board, the reading of which was received with applause.

“EDITORIAL ROOMS,

“HOARD'S DAIRYMAN,

“FORT ATKINSON, Wis., December 31st, 1894.”

“*Franklin Dye, Secretary, Trenton, N. J.:*

“MY DEAR DYE—Have just received the program of your twenty-second annual meeting. I feel so much interested in the progress of agricultural education and judgment and practice in New Jersey that I feel compelled to drop you a line of commendation of the very excellent program which it seems to me you have prepared. I cannot see how such projection of thought into the consciousness of New Jersey farmers can fail to do great good.

“Shall always watch your agricultural matters with increased interest, owing to the contact I have had with your good people.

“Yours truly,

“W. D. HOARD.”

A resolution in regard to the extension of free rural mail delivery was offered by Mr. Beans, and was, on motion, referred to the Committee on Resolutions.

Mr. Matthews offered a resolution in regard to reduction of freights on peaches by the railroads.

Mr. Baker offered an amendment making it apply to all small fruit shipments.

Mr. Lewis offered a further amendment that the legislation proposed should apply to all farm products.

On motion to refer to Committee on Resolutions—

Mr. Matthews—I would like to make an explanation of this resolution. Last winter there was introduced in the New Jersey Senate a bill somewhat similar to what we ask for, but on account of the disjointed condition of affairs in the Legislature it was put out of sight, and nothing was done with it. The fruit-growers in Hunterdon county, at their last meeting, in December, resolved they would make an effort to secure the passage of a law which would bring about the desired effect and reduce the freight rate on peaches shipped from points within 100 miles of market. In the county where I reside we have had an unusual crop of fruit, and the prices paid for hauling to market are very extravagant. From Ringoes, where I live, we paid eight cents per basket for a distance of fifty-five miles. We sent 1,400,000 baskets from our county over the different railroads, to market. Taking this on the basis of eight cents per basket, the freight will amount to \$112,000, which was received by the railroads for handling the crop. A reduction to six cents per basket, as proposed, would save this difference of twenty-five per cent. to the farmers of the county, and under the circumstances it is highly important to give this industry some stimulus. Fully one-third of the orchards

in our county are about to be taken out of the ground, and few of them will be reset unless something is done to stimulate the industry. We ask the assistance of this Board in this measure. We want your encouragement and that of the surrounding counties. We are circulating petitions in relation to this legislation.

Mr. Baker—In Cumberland county we have about 3,000 acres of strawberries, producing about 7,000,000 quarts, on which the freight is one cent per quart. On a barrel of sweet potatoes the freight is only twenty-five cents, while a crate of berries costs thirty-two cents. The contents of a barrel equal those of three crates of berries, yet the freight is less than on one crate of berries. The whole difficulty lies in the method of classification by the railroads. I have therefore suggested that the legislation shall cover all small fruits.

Mr. Matthews—I heartily concede the request, as I think the freight on farm products is too high.

Mr. Wood—Would it not be better to ask for the appointment of a railroad commission to adjust the question of freight rates? Have this commission composed largely of farmers, and then we can hope for justice.

Mr. Collins—I remember having read in the papers that the farmers of Hunterdon county had made a profit of 25 per cent. on their peach crop last year. It would be well to keep that out of the papers if you want to secure the legislation referred to.

Mr. Fitzga—Four or five years ago a horse could be shipped from New York to Somerville for \$2.80. To-day it costs \$4.80 for the same service. That means that the farmers are deprived in our neighborhood of the revenue they formerly received for pasturing horses from the city, for this freight rate would just about pay for two months' pasture for a horse, and now the horses are sent to Long Island for pasturage, and we lose the revenue we formerly received from this source.

Mr. Bodine—I wish to make a statement in relation to this matter. The railroads, before peaches are ripe, carry apples from our station for three and one-half cents per basket, and the moment peaches are shipped, they charge nine cents for the same service. It was formerly eleven cents, but the matter was brought before the Inter-State Commerce Commission. The commission held a meeting and considered the matter, and while they did not think they could interfere, they hinted to the railroads that the rate charged was excessive. The railroads took the hint and reduced the rate to nine cents per basket. Now, if they can carry apples for three and one-half or four cents per basket, they can certainly afford to carry peaches for six cents per basket, and this is all we ask of them.

Mr. Baker—Let us have the reduction on small fruits also, as the rates on these are equally excessive.

The Chair—It would seem as though this whole matter had better be referred to the Committee on Legislation for a hearing, and they can then put it in the best possible shape, and return it to the Board for action.

The question then being on reference of resolution as amended to the Committee on Legislation, it was agreed to.

Mr. Rorer offered a resolution in relation to the exemption of quail from gunners, and one in relation to obnoxious weeds, which were referred to the Committee on Resolutions.

Mr. Pohl—I would like to ask the attention of this Board to the resolution just offered, as the quail is one of the birds most beneficial to farmers. In our county we are overrun with obnoxious weeds, as much of our land is held by wealthy men who have advanced money on mortgage to poorer men, and have thus obtained possession of the land. These lands in many cases are lying idle and are covered with weeds, and we ask for some protection from them.

Mr. Fitzga offered a resolution in regard to proposed changes in the Public School laws. It was referred to the Committee on Resolutions.

Mr. Fitzga—I would move that the House and Senate be invited to attend the sessions of this Board.

The motion was agreed to, and the Chair named the following Committee to invite the members to attend: Messrs. Joseph Fitzga, S. B. Ketchum and Thomas J. Beans.

Then adjourned until 2:15 P. M.

FIRST DAY.

AFTERNOON SESSION.

Mr. Burrough in the Chair.

The Chair—I regret to announce the serious illness of Prof. Voorhees, and I shall, therefore, at his request, remain in the Chair until Mr. Lippincott reads his report, when I shall ask him to relieve me from further duty as Chairman.

The Secretary then read his report.

SECRETARY'S REPORT.

It is said "history repeats itself." Does that apply to agriculture in all its successes and reverses? Perhaps under similar conditions, and if it does, then the importance of recorded agricultural history will appear. If the ancients were successful in destroying injurious insects, overcoming the effects of drought, and counteracting the diseases of plants and animals, why did not they leave a record of prescription and procedure, so that we could escape the perils named, and make agriculture more profitable? But, alas, we have to grope along for ourselves, and in some directions, it must be confessed, the sky is quite dark, but the bright streaks have not all left the agricultural sky. No, for agriculture is the hope of the world. Scattered nomadic tribes may subsist in some fashion by hunting and fishing, but thickly-settled populations, as they are found in most civilized countries, must depend on an active and progressive agriculture for subsistence. And much more is this so when, as in the United States, nearly half the total population is engaged in other than agricultural pursuits. Over against every farmer's family is another family reaching forth to him for the needed food-supply. The 30,000,000 farmers must feed the total 65,000,000 population. The farmers of the United States are able to do this, and in addition produce 75 per cent. of the total exports of the country. The total agricultural products of the country is almost beyond conception,* far exceeding the combined money value of all other industries. But the prophecy by some that the population of this country will soon exceed, in its demands, the capabilities of our agricultural lands to satisfy is, in my view, without foundation. Such prophets seem not to consider that both progressive farmers and scientific men who are studying agricultural problems of soil capability, the needs of crops and the means of supplying them, are, under the most approved management, far exceeding past expectations in crop production. If this is the case now when agricultural science and improved practice—improved because working according to correct theories and rules—are but just beginning their influence on the great mass of agricultural workers, what will be the result when the bulk of the

* For the total products of New Jersey, see Table II.

agricultural lands of the United States are, by correct methods and true skill, made to do all that they are capable of doing?

Why, if Texas should be farmed to-day as Holland is, she could feed the present total population of the United States. That little country, no larger than our State of Maryland, supports 6,000,000 of people, chiefly by agriculture. If production now exceeds consumption at paying prices to the farmer, what of the future? There was a few years ago, more than now, an advantage in price to the producer of quickly-perishable crops who had a near-by market, but quick and cheap transportation in refrigerator cars and vessels has largely overcome this, so that Southern and California fruits, Western fresh meats, &c., are in our Eastern markets competing with the New Jersey and the New England farmers, to say nothing of flour, butter, poultry and even milk.

These changes are radical and permanent, and our Eastern agriculture and horticulture must be planned to meet changed conditions in this country, and it is the work of a thinking, discerning, intelligent man to do this. No other will succeed.

In addition to this home competition, other countries are doing just as we have done—put long-neglected areas of virgin soil under cultivation and largely to such crops as have been considered staple crops with us. Hence, for example, the world is full of wheat. A surplus at low prices has led to a new and more profitable use of this cereal, however, and one-seventh of the crop of North America will be fed to stock. Argentine has run up so rapidly in her wheat production she is now the third largest wheat-producing country on the globe, and her exports of this cereal to Europe exceed those of the United States. In two years, our Consul-General at Frankfort reports Argentine wheat exportations to Germany have increased five-fold, while the importations from the United States have fallen off one-half. During the past year the Argentine Republic sent more wheat to Germany than the United States shipped there. The future outlook for our wheat-raisers is not a very hopeful one, as the Argentine Republic is only in the early stages of its development in wheat-production. India comes in with her great product, helping to swell the enormous total. Meanwhile invention has quickened commerce on sea and land. The steamship and locomotive are brought into requisition by speculators, who are doing all they can to *level the cost price to consumers in all countries, regardless of the cost of production in*

any one country. Hence the price of the American farmers' product is not determined at home, but the world's markets fix the price on the world's products. The cost of production, then, is one item of importance. While this cost has been, and is, much lower in foreign countries than it is in the United States, yet for farm work here the price has been steadily advancing for the last twenty-five years, and in proportion as agricultural work has become unpopular amongst workingmen, and as the profits from agricultural products, notably wheat, have decreased, there is also the added loss from decreased efficiency. "The scarcity of good help on farms, although great numbers are unemployed in the cities, is a condition of the times which baffles all who seek remedies for it. Much attention has been given to the subject in the public press by farmers' organizations and by labor bureaus, but we seem to be as far from a solution of the difficulty as ever. Among the most recent contributions to the literature of the subject is to be found in a volume issued by the Massachusetts Labor Bureau, entitled 'Unemployment.' The bureau sent out many inquiries to farmers to get an explanation of the situation from their point of view. From the answers it appears that there is a great disinclination on the part of the native-born population to remain on the farm, and what help there is, is now largely foreign and of a low degree of industrial efficiency. In many localities recent immigrants are almost the sole reliance of the farmers. None of the replies, however, suggest how the situation can be reversed. The chief difficulty lies in the social advantages of the large cities, which seem to be an irresistible attraction."

For this State the past year a majority of the county reports say laborers on the farm have been more plentiful, attributing as a cause the want of employment in cities and factories. The laboring man can purchase the necessaries of life now quite as cheaply, if not even at less cost, than he could at any time during the past decade, flour being the lowest ever recorded.

TABLE I.

TABLE OF AVERAGE WAGES FOR NEW JERSEY FARM LABORERS PER MONTH, WITH AND WITHOUT BOARD, FOR THE PAST TWENTY-EIGHT YEARS.

<i>Wages Per Month.</i>					
In 1866.		In 1885.		In 1894.	
With Board.	Without Board.	With Board.	Without Board.	With Board.	Without Board.
\$18 98	\$32 27	\$14 10	\$23 30	\$15 00	\$27 22
<i>Wages Per Day.</i>					
\$1 20	\$1 68	\$0 83	\$1 17	\$0 90	\$1 25

Without board, men employed by the month or year usually have a house afforded them by their employer in addition to the above money consideration.

From the foregoing, we conclude that unless the farmers can find new sources of profit by the substitution of crops that will pay better than wheat now does, or a more profitable use for wheat, as is being done, he will be less able to meet the increase in cost of production.

But the reduction in the price of wheat and the increased cost of manual labor are not the only items to consider in this connection. The fertilizer bill of our New Jersey farmers annually foots up nearly \$2,000,000. An item costing so much as this suggests the need of great care in its selection and application. Can this cost be reduced? Yes, by increasing the home-made article. The value to an average-size farm, stocked in the usual way, of the home-made manure crop is not generally appreciated. It is only by careful management, both in accumulating, protecting and applying, that its worth can be known.

The field crop will respond to a generous treatment of good home-made fertilizer in a way that will give satisfaction to the owner. Even though we keep up our present outlay for commercial fertilizers let us be sure and supplement that with a generous supply from the stable and pen. They will greatly increase the efficiency of each other. In the purchase of feeds for farm stock the fertilizing value of the same should have due consideration also.

In the Farmers' Bulletin No. 21, issued by the United States Department of Agriculture, it is estimated that if the fertilizing constituents of the manure produced by all the farm animals of the United States are estimated at their market value, the total amount

foots up to the enormous sum of more than \$2,000,000,000 in a year. This estimate does not mean that the manure produced by our farm animals is actually worth that amount of money to the farmers, for much of it is actually thrown away and much of it is carelessly applied. It means, however, that the phosphoric acid, potash and nitrogen which this product contains would cost that much if it were purchased. It ought to be borne in mind, too, that if this valuation is too high it takes no account of the use of manure in improving the mechanical condition and the drainage of the soil, which is almost as important as its actual fertilizing value. Prof. Roberts, of Cornell University, thinks that \$250 is a conservative estimate of the value of the manure produced during the seven months including the winter, on a small farm, which carries four horses, twenty cows, fifty sheep and ten pigs. At least one-third of this is lost, which would mean for the whole country a waste of nearly \$700,000,000.

If Prof. Roberts' estimate is anywhere near correct, we see what a value attaches to this product per farm and in the aggregate in New Jersey, even leaving out the sheep from our list of farm stock.

Without pursuing the adverse side of the question further, let us look for a moment at some of the encouragements to farm life. First the farm—what is the estimated value of our farms now? The farm that represented to its owner a value of \$10,000 to \$15,000 when he was realizing the prices named for 1866 and along that period, represents a value to the buyer now of from \$5,000 to \$8,000. Speaking in general, the reduction is so great that farms are lower than before the War of the Rebellion. These reduced values represent the present cost to the *buyer*. The plant, therefore, costs about half of its former price. Here is a great saving both in capital locked in the farm and the interest thereon. Machinery, too, is very much lower than it was a few years ago, and much of it much more perfect, being better adapted to the various requirements of the farm. This is a gain.

Horses, too, are on the down grade in price. And this is better for us in New Jersey, as we raise but few for sale. Electricity has banished them from the slavery of city railroads largely, and with present progress, I see no obstacle which cannot be overcome to its application to farm work soon. With these advantages and many others in favor of the farming business, and set over against the decline in profits on some crops, I am quite sure we can safely recom-

mend it to our enterprising young people, especially those with limited capital. No other business offers such opportunities for a comfortable living and a happy, refined life. And we must remember there are some hardships common to all. A city life does not exempt from taxation, toil, hardship and deprivations.

In estimating the cost and profit side of farming, every benefit we receive incidental to the business, which, were we in other business, we would have to pay for extra, should be put to the credit side of agriculture. As for example—rent of house, maintenance of family from products of farm for which no cash outlay is made, and various other items.

As indicating to some extent the importance and value of farms in New Jersey and the acreage, yield and value of the crops produced, the following figures from the December, 1894, report of the statistician of the Department of Agriculture, as compiled from United States census and from State crop reports, are given.

Those who are disposed to look at the bright side of farm life may find some arguments here to meet those who are constantly crying down the business of agriculture.

TABLE II.

Product.	Acreage.	Bushels.	Value.
Corn.....	271,639	8,991,251	\$4,855,276
Wheat.....	116,279	1,779,069	1,085,232
Oats.....	108,647	3,085,575	1,172,519
Rye.....	75,708	1,120,478	616,263
Buckwheat.....	13,647	196,517	127,736
Potatoes.....	46,611	2,796,660	1,733,929
		Tons.	
Hay.....	505,554	586,443	8,262,982
			<u>\$17,853,937</u>

Adding to this the dairy products, the fruit, the horticultural and greenhouse and the poultry, leaving out the lumber, will give \$11,143,412 additional, or a total of \$28,997,349, a value per acre of \$10.89, being higher in New Jersey than in any State of the Union, and an average value per acre of the improved land of \$14.51. The improved land constitutes 75.1 per cent. of the total area in the State. The average size of farms in New Jersey is 86 acres; average value of land, fences and buildings, \$5,166; of implements and machinery

per farm, \$239 ; of live stock, \$513. Total average value per farm, \$5,918. Rate of gross earnings on capital invested, 15.9 per cent. Of the 30,828 farms in New Jersey, 22,442 are worked by their owners, 3,449 are rented for money and 4,937 are worked for a share of the products.

FORESTRY.

In my report last year I referred to the important question of wood growth, forest cultivation and preservation. I am pleased to state that a law was passed by the Legislature after our annual meeting last winter giving power to the State Geologist along the lines recommended, and that good work is now in progress under his supervision looking to the rehabilitation of our southern lands with forest growth and looking to the prevention of forest fires.

But there is a part in this business for farmers. Timber of certain kinds is quite profitable, and much cleared land is lying in a profitless condition on many farms the State over. If such land is not adapted to strictly agricultural crops, and hence is now comparatively profitless, the wise course would seem to be to stock it with trees of quick growth and valuable as timber.

Properly planted and regularly cared for, such lands would soon be of much value. There are fields not far from this city worth \$50 per acre for farming purposes ; while the crop of locust trees on the same is worth \$80 and \$100 per acre, and no care has been taken in their planting or culture. The number of trees on this area could be increased five times over. Hitherto our woods have had no attention in the way of close planting and quick growth. Why should not worthless underbrush give way to seed and tree-planting, such as chestnut, locust, osage orange, &c., and impoverished woodlands be stimulated to early profit through the application of needed tree food? Even a crop of maples is better than no crop.

Notwithstanding the wide uses to which iron is put, and although at present we seem to have a limitless supply of coal, yet wood will always be in demand. And the demand may increase in the near future.

During my stay of a few days the past summer in New England, the American Forestry Association held a series of meetings in New Hampshire, which I was invited to attend. Before deciding to do so, however, I received a communication from President Burroughs

requesting me to be present at the meetings of the association as representing both this Board and the Forestry Association of this State. Accordingly I joined the company, which was made up of more than sixty men and women, representing nearly every State in the Union, the head of the United States Forestry Division at Washington, D. C., with a delegate from England, Canada and Russia. The first meeting was held at Plymouth, N. H., with an opening address by United States Senator Chandler, who said "there is a work for this association in the country at large, but especially so in New Hampshire, for if the work of devastation continues this State will soon lose its name, the 'Switzerland of America,' and become the desert instead."

General George H. Adams, in his address of welcome, said: "The fathers strove to destroy the forests; no wonder their children are slow in combating the old idea." A paper was read at this meeting by Hon. Joseph B. Walker, of Concord, historical in its character, on "The White Mountains."

The next meeting was held at the Profile House. Here George B. James, of Boston, gave an address. He said America has no doubt been wasteful of her lumber. In this country lumbermen market only about fifty per cent. of the total, but in Europe they dispose of eighty per cent. What is here lost is there utilized. The United States has one-half of the forest area of the world, leaving out Russia, but we consume one-half as much as all the world. Believes lumber will be dearer within the next twenty-five years. He suggested a plan of forest preservation by forming a Forestry Association of both gentlemen and ladies, have shares of \$5 each, make the membership large, buy up several hundred acres and put up the flag—Forest Preserve No. 1. Buy up cheap and abandoned farms for this purpose, then establish your ponds, brooks, &c.

Prof. J. R. Redmond, of the Appalachian Club, Howard Preserve, said they have bought up by co-operation and now hold, subject to a lumber contract, 118,000 acres in fee simple, lying in three sections twenty miles apart. Have expended a large sum for club-houses and roads. Each member secures a cottage plot of five acres. Their sale of lumber aids in keeping down expenses. Ladies can be members on equal terms with men. He believes a "wise utilization the only method of forest preservation." A sentiment which was generally agreed to.

On this same line Senator Chandler said we want government reservations and State parks for forest preservation. New York has acquired 600,000 acres, and private enterprise has secured 900,000 more. We should have township parks and private parks. Land sold for taxes should be held by the township for forest lands. Then we should have State laws to grapple with this subject, regulating the cutting of timber for the good of the State, as to the water-supply, &c.

Another meeting held at Wentworth Hall was presided over by Mr. Appleton, a member of the Massachusetts Board of Agriculture. He said their board is deeply interested in the movement for forest preservation. They have a standing committee on the subject, of which he is chairman. An illustrated lecture was given by B. E. Fernow, Chief of the United States Forestry Division, at the last meeting, illustrating forest destruction and the many pernicious effects which have followed in so many instances in different countries.

The above brief summary of the meetings held is given here in the hope of exciting a deeper interest in this general subject by the farmers of this State. There is no good reason why, at this time of the low price of land, we should not have associations for forest preservation, both State, county, township and individual. For our State, it is *especially* important that it should acquire possession of the hill and mountain regions from which our large, growing cities must depend for a supply of pure, wholesome water.

Smaller forest preserves, whether held by counties, townships or individual associations (preferably, perhaps, the latter), subject to proper and necessary law for protection, would ornament any locality, afford a refuge for insectivorous birds, for game and fish, and a place of healthful summer resort to the members. Existing forests along our seacoast should be preserved and extended. In close proximity to our many seaside resorts they would add much to their attractiveness and beauty, and would serve as an equalizer of climate, both in summer and winter. Whether this Board will have a standing committee on this subject to co-operate with the State Geologist and such persons or societies as are interested in this subject, is for you to say.

But let us, as farmers, keep a few acres at least in profitable wood culture, and give our personal assistance and support in this matter in all possible ways.

CONTRAST BETWEEN NEW ENGLAND AND NEW JERSEY
AGRICULTURE.

During my short stay, chiefly in New Hampshire, Vermont and Massachusetts, I took occasion also to contrast the methods pursued by farmers there and in New Jersey. There the business of the farm is in most cases closely managed. By "closely managed," I mean greater economy of home resources; less wastefulness of products having value for home use or market; more diligence in collecting the by-products and the little values which, when aggregated, amount to a significant sum of profit. The acres on the farm worthy of cultivation are made to do their best—for there are many acres of little or no value for agricultural purposes. Perhaps it is owing to this fact that many New England people have been successful where others would have failed. Their necessities compelled energy and industry. Their poverty of natural resources agriculturally led to mental enlargement and invention.

Further, there is noticeable in the construction of their farm dwellings and farm buildings a purpose to economize space, save labor and conserve warmth to stock during the long winters. For example, many sets of buildings are so arranged that one can go from the kitchen to the wood-house, from the wood-house to the carriage, wagon and tool-house, from thence to the horse barn, then to the cow stables, and finally into the great barn, and not step out of doors in going the whole round of chores.

For convenience and comfort all around this is a good arrangement. The only great drawback is in case of fire. If a fire should start at one place the contiguity of the buildings might involve a total destruction. This, however, is of rare occurrence. There is also a quite general evidence of neatness and order about buildings, farmyards and fences suggestive of *business management* applied to agriculture. This should be more general. It is so now amongst our more progressive farmers in New Jersey. Let the same spirit of intelligent improvement extend to every farm and to every farmer's home throughout the State.

Their field work is of the *intensive* character. Hence we find that although the total crop of the States named is not large for corn, potatoes, hay and similar crops, yet their average yield per acre exceeds ours. This should not be the case. All of our best farmers

far exceed their average yields per acre, but we have so many broad acres poorly farmed, all which go into the total estimate, the average for the State is lowered, and lowered to our discredit. Averages which include all poor work do not show the capabilities of our soils and climate to the world outside. They are a bad advertisement.

In this connection I will state I made inquiry in Springfield, Mass., especially concerning the supply of their markets with Southern fruits. I found the leading dealers were ordering their peaches direct from Hunterdon county growers or the Fruit Exchange.

The newspaper "ads" stated "A fresh carload of peaches will be received on Monday morning direct from New Jersey. It is conceded by all that the New Jersey fruit is the best that comes to our markets. Persons desiring peaches will please take notice and order early."

In sweet potatoes I found they were buying from other dealers in New York or Philadelphia. I asked why they did not deal direct with the producers at Swedesboro, Vineland and other points in New Jersey. The reply of one was he had tried that one season and considered the grower had not treated him fairly. I brought with me the names of some of those dealers, and believe a good arrangement could be made with them for shipping sweets direct from the farm if growers will make the effort.

THE DAIRY.

Milk production seems to be increasing annually in the State, and it is an industry—a branch of agricultural work—that should be carefully studied in all of its relations.

Much has been said and written on the subject. This Board has had some of the ablest dairymen in the country to talk on the various phases of the question. Our reports and others contain much concerning it, and yet there is much to study, much to learn and some things to unlearn as new complications develop each year.

The money value of the milk product in this country is estimated by good authority to exceed \$1,000,000,000 annually. This one product of the farm exceeds the entire banking capital of the United States by \$335,000,000.

"In 1893 there was delivered and consumed in New York and adjacent cities 93,035,154 gallons of milk, and if this were all poured out on Central Park at one time it would flood it six inches deep and

cover Manhattan Square. Put into barrels it would fill 2,953,270, enough to load 30,000 cars of 100 barrels each. In the same year there was received in New York 91,000,950 pounds of cheese. This is enough to make one cheese 100 feet square and 133 feet high. The amount of butter, 89,362,806 pounds, would be enough to make a roll 100 feet square and 144 feet high. The money value of these products is as follows: Butter, \$18,155,650; cheese, \$10,068,391; milk and cream, \$16,249,254; total, \$44,473,203, which the New Yorkers pay annually for our dairy products; and is it too high an estimate to say that other cities and towns, with the country at large, in this State, consume as much more? I think not." (From a recent address by J. B. Shuttuck, Norwich, N. Y.)

The proportion sold from this State to supply New York City is not small besides that which is furnished the adjoining cities in New Jersey. Then the great market of Philadelphia, lying on our western border, makes a large annual demand on New Jersey producers. This is estimated by reliable judges to be about 90,000,000 quarts of milk annually, and that of this amount about 16,000,000 is supplied from the State of New Jersey.

In addition to the above, New Jersey supplies the city of Camden with probably 6,000,000 quarts of milk annually.

It is wise, therefore, as it seems to me, to keep this subject before us, studying it in all its phases—the cow, her feed, her surroundings and her general management, so as to conduce to her health and that of her product. The important part she plays in our food-supply of milk, cream, butter, beef, &c., associates her more closely with the support, comfort and health of man, where the two exist together, than is the case with any other domestic animal. And as a source of profit to the producer of milk and to the dealer in dairy supplies, to transportation companies and manufacturers, she stands at the head of the list.

The difference in capacity of milk cans in the different cities is, in some respects, unfortunate. Whether it will ever be made uniform is uncertain. "The Milk Reporter," Deckertown, N. J., gives the following variations: In Boston a "can of milk" means eight and one-half quarts. In Chicago a can means thirty-two quarts. In New York, forty quarts. In Philadelphia a can may mean thirty, forty or fifty quarts of milk, by dry measure. A New York can will hold but thirty-five quarts by the Philadelphia standard. The

“Reporter” also says two thirds, at least, of the milk needed to supply the New York market at this time is furnished from creameries. The probabilities are that more creameries will be built the coming season than during any year in the past five, on the roads leading to New York. Six new ones will be built on the O. and W. alone.

COLUMBIAN DAIRY TESTS.

Concerning the action of the Board at the last annual meeting relating to the publication of the Columbian Dairy Tests, the resolution as passed was sent to Secretary Morton, February 1st. In his reply of February 5th, he says :

“I am in receipt of your note of the 31st ultimo, containing resolutions passed by the New Jersey State Board of Agriculture, requesting the United States Department of Agriculture to publish, for the use of the farmers of this country, the dairy tests made and recorded at the World’s Columbian Exposition, and will give it early attention.

Very respectfully,

“J. STERLING MORTON,
“Secretary.”

Not receiving any further notice of any act of Congress in reference to this subject, Secretary Morton was again reminded of our action and request on December 22d, as follows : “I write to remind you of the resolution of the New Jersey State Board of Agriculture, passed last January at its annual meeting, a copy of which is herewith sent, also to reiterate our request then made, that when the said report is published this Board might receive at least twenty-five copies for distribution among its officers. I do not know whether the report has been published as yet, hence reiterate the request.” To this the following reply came : “Yours of December 22d, inclosing copy of resolutions regarding the Columbian Dairy Test Report, has been received. A resolution authorizing the Secretary of Agriculture to publish this report has recently been introduced in the House of Representatives, but has not been acted upon. I would suggest that you write Hon. William H. Hatch, Chairman of the Committee on Agriculture, and state to him the views of your Board regarding the publication of the report. I will file your request for copies of the report with a view to sending them when it is issued.” Accordingly the following was sent :

"Hon. W. H. Hatch, Chairman of Committee on Agriculture, House of Representatives, Washington, D. C. :

"DEAR SIR—In writing to you I recall the fact of your presence among us a few years ago, and your valuable address before our State Board of Agriculture. I now communicate with you for the purpose of calling your attention to the action of our State Board at its last annual meeting respecting the Columbian Dairy Tests and the report of the same, which we hope will be published by the United States Government. We believe there never has been in the history of the world such complete and interesting tests made as were made at the Columbian Exposition, and from the fact that the analyses of the milk and butter are all verified, the food of every kind fed recorded and the story of the feeding told covering so many thousand entries, we believe that such a work would be of incalculable value to dairymen throughout the country.

"When the resolution of our Board herewith inclosed was pending a number of members sent their names in to me immediately, applying for a copy of said report when published by the government.

"We would be glad to have at least a hundred copies for the officers and directors of this Board, to say nothing of the other farmers throughout the State. But not to weary you further, I wish this letter to emphasize the action of our Board earnestly requesting the government to publish said report for general distribution.

"Respectfully yours,

"FRANKLIN DYE,
"Secretary."

No answer to this has been received.

Now if these tests were made in the interest of practical agricultural dairying, and are as valuable as Mr. Buchanan considers them to be, as he stated at our last meeting, then why this delay in their publication? If our members of Congress really desire to help the farmers, why has not the Department of Agriculture been authorized long ago to publish this report for the farmers of the United States? Although other interests than agriculture seem to engross their attention, let us renew our request, urging favorable action.

COUNTY BOARDS.

Most of the County Boards are doing efficient work for the improvement of agriculture within their bounds. Regular meetings are held, programmes of subjects being printed and circulated previously. The subjects presented have a vital connection with local agriculture, and these, taken up and discussed, frequently put a neighborhood of

farmers on their guard against the invasions of diseases which threaten vegetables, fruit or stock, and insect enemies that may be in progress to a general dissemination. Furthermore, mistakes in agricultural practice, as in the kind, quantity and method of applying fertilizers, errors in tillage, in planting, in harvesting, marketing, &c., are soon discovered and made known, to the advantage of all. Where farmers earnestly encourage these boards by their attendance and participation in discussion the effect is very evident in such neighborhoods. The mistake of too many is a total indifference to this and kindred means of improvement.

There were ten special farmers' meetings of the Institute character held by direction of the Executive Committee during the month of December. Some of these were held in connection with the regular County Board meetings, and all of them were well attended and the interest shown speaks well for the future work.

In Warren county the meeting was held in Washington, and the County Board was re-organized under encouraging circumstances. There are now nine or ten other Institute meetings arranged for to follow immediately after this State Board meeting. One excellent result following these meetings is the demand for the extension lectures of the State Agricultural College, and it is certainly an indication of progress. The work of this Board and its auxiliaries, the County Boards, the State and subordinate granges, is bearing no uncertain fruit. The farmers are seeking for the latest and best information—experimental, practical and scientific. Let the good work go on. Your Secretary has addressed and conducted many of these meetings to the best of his ability.

FRUITS.

The fruit products of the State are very large. While no summary of statistics is here given, the County Board reports in some cases show quite fully the output for the year. Hunterdon and Sussex counties lead in the peach product. The summary of our committee on those reports, as well as the county reports themselves, should be carefully read. The statistics of crops and prices for the past year for the State will be printed as heretofore, preceding the county reports.

From the special—November, 1894—report of the American Cranberry Growers' Association, furnished by the Secretary, Prof. A. J. Rider, the figures for this crop for 1894 stand :

	1893.	1894.	
New England.....	575,000	185,000	Decrease, 68 per cent.
New Jersey.....	325,000	200,000	“ 37 “
The West.....	100,000	25,000	“ 75 “
	1,000,000	410,000	

In these figures New Jersey is pitted against “The West” on one hand and “New England” on the other, and it must be conceded our little State in the comparison tips the beam. Mr. Rider says :

“I am convinced that the above figures more nearly represent the actual crop of the country than any heretofore given, and show the present to be but little more than two-fifths the crop of last year and the smallest since 1884. It has its near parallel in the crop of 1883, 395,995 bushels, when prices ranged about the same as this year up to this date, continued at \$3.75 for Jerseys in January, and went out at \$5.25 to \$5.50 at the end of the season.

“Unless a sharp advance comes soon (which is not at all improbable) the experience of that year is likely to be repeated.

“The Crop Movement.

“While I have not railroad statistics of the movement of the New Jersey crop, I have compiled the following from personal knowledge :

“Movement directly west in car-load lots—

	Cars.
By the Pemberton and Highstown railroad.....	52
By the New Jersey Southern railroad.....	41
By the Camden and Atlantic railroad.....	14
By the Philadelphia and Atlantic City railroad.....	24
Total.....	131

“Or, counting 675 bushels to a car, 88,425 bushels.

“An unusually large proportion to be moved directly west at this season, if indeed, it has ever been equaled.

Friends of the foreign trade enterprise will be pleased to know that cranberries are going abroad at the rate of 200 crates per week, notwithstanding the high prices.”

What a State we have! How varied and abundant her products; how capable her soils; how salubrious and healthful her climate;

how large and near her markets! Why should not her lands be in greater demand? They should be and with proper advertising they will be. Not far in the future the northeastern, central and southern portions of the State will be but a series of fruit and market-gardens, laid under annually-increasing tribute to supply seaside and inland growing towns and cities and the two great markets contiguous to her borders, with all crops indigenous to her soils and with milk, cream, butter, poultry and eggs.

Let it be our aim to develop hitherto-unknown possibilities of soil and production, to increase the opportunities and intelligence of our young farmers, to educate, improve and cater to our markets so as to win and hold them, to make our homes more home-like and attractive, our business more respectable, and our members capable and worthy of any official position in county or State.

On motion, the report was received and referred to Committee on Officers' Reports.

The Committee to Nominate Officers for the ensuing year was then named as follows:

Atlantic.....	V. P. HOFFMAN.
Burlington.....	G. W. JESSUP.
Camden.....	I. W. NICHOLSON.
Cape May.....	H. L. SABSOVICH.
Cumberland.....	F. S. NEWCOME.
Essex.....	WILLIAM DE CAMP.
Gloucester.....	ALBERT HERITAGE.
Hunterdon.....	W. H. OPIE.
Mercer.....	S. B. KETCHUM.
Middlesex.....	CAPT. BLISH.
Monmouth.....	W. H. REID.
Morris.....	J. H. CASTEBLINE.
Ocean.....	W. H. WOOD.
Salem.....	CHARLES R. LOVELAND.
Somerset.....	JOS. FITZGA.
Sussex.....	J. A. McBRIDE.
Union.....	F. E. WOODRUFF.
Warren.....	B. R. CLIFFORD.

The Chair—Mr. Lippincott and Mr. D. D. Denise visited the Toronto Fair on behalf of the Executive Committee, and we will hear their report now.

Mr. Lippincott presented his report on

CANADA'S GREAT FAIR.

The annual exhibition of the Province of Ontario is called "Canada's Great Fair," and is held in the city of Toronto. This fair is not entirely agricultural, but embraces the various industries of the Province, and whoever takes time to examine the exhibits and investigate the management will find the term "Great" has not been misapplied. Toronto is situated on a beautiful bay, separated from Lake Ontario by a peninsula, known as "Gibraltar Point," and upon this bay a park, belonging to the city and known as the "Crystal Palace Grounds," is located, and here the "Great Fair" is held. The largest buildings on the grounds belong to the city, the Main Building being a fine structure and looking as if built expressly for some kind of an exposition, while the Horticultural Building is on a large scale and excellent taste has been displayed in its surroundings as well as its interior. Ample accommodations had been provided in every department to show exhibits to the best advantage, and a very noticeable feature of the grounds was a board walk, six feet wide, that extended all around the buildings, so that in case of stormy weather visitors would not be subjected to the discomfort of walking in the mud, and the buildings could always be kept clean. In the evening the main walk, extending towards the lake, was lighted by electric lights and beautifully decorated with Chinese lanterns, that made the grounds look like an enchanted garden. We were told that the grounds were under the control of the city and were used as a park by the citizens except during the time devoted to the exhibition, and all profit derived from the fair was applied by the directors to erecting and improving the buildings and keeping the grounds in order. The grand stand, horse stables and cattle sheds were built by the directors and the expense paid out of the fair receipts.

An article in the programme for 1894, and headed "To Our Patrons, the Public," says:

"The Toronto Exhibition Association is not a joint stock company, and its members have no pecuniary interest in its financial success or otherwise beyond a philanthropic desire to encourage the promotion of agriculture, horticulture, floricultural and industrial pursuits, to stimulate inventions, fine arts and domestic economy, and provide entertainment and enjoyment for its patrons. All profits from each year's exhibition must, by the requirements of the charter, be ex-

pendent in improving and adding to the grounds and buildings. Its directors receive neither pay nor reward beyond the gratification of knowing that their efforts year after year are crowned with success."

The fair grounds have a wonderful advantage in location. From the grand stand the track extends nearly to the bay, and you can look far out over Lake Ontario, that stretches before you like an ocean, and between what art displays immediately in front and nature in the distance the interest never fails. On entering the various departments you will be impressed with the methodical arrangement of everything. The grains and seeds for which the Province is noted seem so perfect and pure they are good advertisements in themselves. Barley of the finest quality was shown; and the farmers of Canada raised all the barley that was imported by the United States before the passage of the McKinley tariff, but in our conversation with the Ontario farmers we found they were preparing to raise barley again under a lower duty, and their barley commands the highest price, owing to its superior qualities for malting. In the Horticultural Building there was a symmetrical arrangement of plants and flowers that filled visitors with admiration as they viewed the blending of different shades of green in the palms and ferns that occupied the center, and from this point a subdued light seemed to be shed over the more gaudy plants and flowers, while elegant floral designs and cut flowers glowed with a hundred hues against a background of green. In a fine display of apples, the Cayuga Redstreaks and Duchess of Oldenburg were particularly noticeable for their great size. Pears were in great quantity, with no discount as to quality for eating. The peach and plum exhibit was very attractive, and the Wheatland peaches were much admired. A large peach-grower from the State of Ohio frankly admitted that Ontario was far ahead of his State in the fruit business. When the beautiful California peach comes to be sampled it often fails to meet your expectation, but the Ontario peach tastes as well as it looks. Wherever we saw peach trees growing they looked very thrifty, and care is taken to remove those affected by disease; and we were told that a county law makes it compulsory upon peach and plum-growers, when notified by the authorities, to destroy all trees in their orchards that show signs of yellows or black-knot.

All the peaches, pears and plums we saw offered for sale in Toronto were packed in baskets different from ours, but in many ways more

desirable. Their packages are shaped like grape baskets, only larger in size and holding one-third bushel; a frame about two inches wide fits around the top of the basket and is covered with a red netting, through which the fruit looks its best. The rim affords perfect protection, so you can pile the baskets on one another without injury to the fruit, two baskets crosswise just covering two lengthwise, so there is economy of space, and in moving fruit four baskets can be carried at a time, while a purchaser can easily carry two away with him without inconvenience, even if going a long distance in a street car or on a train. These baskets cost forty cents a dozen by the quantity, and the price seems very moderate. Carriages, sleighs, farm wagons and numerous road vehicles almost rivaled this exhibit at Chicago Exposition, while in a profusion of machinery we were attracted by a pea harvester, which seemed like an invention that must prove to pea-growing what the self-binder has been to grain. This harvester consists of an attachment to the cutter-bar of an ordinary mowing machine, and is provided with outside snake divider and inside false shoe, on which it runs, and by which this mowing-bar is elevated three inches above the ground, thereby keeping clear of dirt and small stones. The lifters are hinged to a steel rod at the rear of the bar and can be used on every second or third guard of the mower, as the crop may demand. In connection with the harvester, an ingenious canner has a method of running the vines through a machine that shells out the peas, and if hand-picking and shelling can be dispensed with, it may largely increase the canning industry, which must be an advantage to the farmer.

The buildings and pens for cattle were arranged in rows on broad avenues, and painted a light-brown color. They were mostly roofed with tin shingles, that gave them a nice finish. The stables for horses were made of smooth boards, and many stalls were tastefully decorated; one even had lace curtains for its favored occupant. The horse exhibit included all kinds of horses and a great variety of teams, and the whole number entered, including children's ponies, amounted to 871, yet of all that number but 46 were entered as standard-bred trotters, and we were told that the prizes offered for speed were so small that fast trotting was not made a special feature. Judging from the exhibit of cattle, the breeds that can be best converted into beef seem to be most reared, as of 608 entries, but 83 were Jerseys, though we were told that the Guernsey and Jersey breeds were growing in

popularity, and the best butter was bringing, at that time, 29 cents per pound in Toronto.

Many of the farmers butcher their own cattle and sell the dressed beef wholesale to the dealers. Sheep made a fine show, there being 442 entries. Some Oxford Downs weighed over 300 pounds apiece, and we were shown a large breed with black faces called Suffolk Downs, and said to be very rare in this country. Swine form an important product of Ontario, and included 395 entries.

It has been asserted that the hog appreciates kind and gentle usage, and the hogs at the fair seemed to warrant this assertion. Many of the large hogs had been brushed down and oiled or covered with something to make them shine, and when different breeds were compared by the judges, the big porkers were taken out of the pens and arranged side by side for comparison, and the sheep were brought together in the same way. We were attracted by a new breed of hogs called the Tamworth; about seventy-five of this kind were exhibited. They are not handsome in appearance, being of a dark-red color and having very long noses, but they possess very desirable qualities, their meat being such a nice mixture of lean and fat, they are highly prized for bacon, and we were shown some of their meat in Toronto market and told that these hogs had been bred for a purpose, as breakfast bacon is a popular dish and generally found on the bills of fare at leading hotels. On the grounds not far from the stock buildings many neatly-inclosed plots of ground of elliptical shape may be noticed; these are used for judging the different kinds of competing stock, and the judges seemed to take great care and deliberation in awarding prizes. The poultry building was large and well filled with a fine collection, but from what we saw offered for sale at the market in Toronto, the Canadians have not yet learned to dress poultry so as to make it attractive. You could buy a pair of year-old fowls for fifty cents, but a buyer would certainly prefer to give double that price for Jersey-dressed fowls if the pairs could be sold in competition. The management of the Toronto fair is one of its peculiar features, and to attract so many people and entertain them for a period of twelve days—the evenings included—must require a great knowledge of the taste of that portion of the population who are its patrons. It costs, to spend the day and evening on the grounds, but twenty-five cents, while twenty-five more will admit the visitor to the grand stand, where a good view can be

obtained of the various races and performances, including balloon ascensions, during the day, while the evening programme announces feats of gymnastic skill, the wrestling lion and the boxing kangaroo, ending up with the "Siege of Algiers," accompanied by a great display of fireworks and enlivened by bands of music. But, aside from the amusements in front of the grand stand, there are no side-shows, no drinking saloons, no gambling fakirs. A man can take his wife and children to see it all and not feel that he has been unjust to a moral sentiment. It was our good fortune to be there on Farmers' Day, when the attendance was the largest in the history of the exhibition, reaching 80,000, and, to show how orderly the vast crowd must have been, I copied this comment from the Toronto "Mail:"

"Hitherto, Citizens' Day has been the great day, but the Patrons of Industry and the farming community showed what they could do, and the exhibits in the different halls were crowded all day. The visitors overran everything except the beautiful flower beds that line each side of the walk from the main entrance to the lake, and since the fair opened not a single foot has disturbed this beautiful spot. Canada's Great Fair differs from a county fair or even a State fair. It is the industrial and agricultural exhibition of a Province nearly as large as France, and is patronized by people from all over the Dominion as well as from the United States. The inhabitants of Ontario are largely descended from 10,000 Loyalists, who left New England during and after the Revolutionary War. They went to Canada impoverished, but they carried there moral and intellectual qualities of a high order, the product of the best civilization of their day, the best materials for making a State."

The people we met were straightforward and dignified in their deportment. It is said their annual visit to Toronto fair is one of the prospective pleasures of the year, to which they look forward and save their money to enjoy. In Ontario there is not such a diversity of taste as in the United States, where the population is cosmopolitan and different classes require various amusements. But, for the instruction of the people as well as for their entertainment, Canada's Great Fair dignifies labor, points to a higher standard of excellence and proves that a fair may be run upon moral principles and still be a success.

D. D. DENISE,
WM. R. LIPPINCOTT.

The Chair—If anyone has questions to ask, Mr. Lippincott will no doubt be glad to answer them.

Mr. Lippincott, continuing, said—This report has, of course, been abbreviated, and there were many interesting things we might have mentioned. For instance, there was a farm wagon, made with high slat sides, in which condition it was handy for carrying stock. By letting these sides partly down it was turned into a hay shelving, and the whole rigging cost only \$65. The machinery exhibited also seemed low in price, and we were much pleased with what we saw.

Mr. Ward—In your opinion, was not the success of this fair due, in a large measure, to the high premiums offered, and the disposition to ignore high premiums for fast trotters?

Mr. Lippincott—We did not ascertain how the premiums ran. Having many things to look at, we did not have time to investigate all these points, but the inclination did not seem to be towards fast horses. It seemed to be more for solid information, and we felt much pleased throughout at the manner in which the fair was conducted. They seem to look to the general improvement of their exhibits, and we were agreeably disappointed with the people also. Eighty thousand people assembled together make a big concourse, and there was no disorder and there were no intoxicated people, as there was nothing to attract a certain element usually seen at fairs. The fair was well supplied with solid comforts in the way of provisions. The Woman's Christian Temperance Union also had a tent where visitors could get a light lunch. There were many attractive sights at the fair, so that the time of the people appeared to be fully taken up, and there was no necessity for side-shows.

The exhibit of grains was particularly attractive, as it was prepared with great care and taste.

Mr. Fitzga—The most remarkable thing about it is the fact that the fair was run at a profit without gambling and without the sale of intoxicating drinks. There is something for us to learn in New Jersey.

Mr. Fitzga—On behalf of the committee appointed to wait on the Legislature, I would state that the Assembly has accepted our invitation to meet with us, but the Senate has adjourned for the week.

Mr. Collins, on behalf of the committee to invite the Governor, reported the Governor absent from the city.

Both reports were accepted and the committees discharged, with the thanks of the board.

Mr. Burrough then called Mr. Lippincott to the chair.

Mr. Allaire presented the report of the Committee on County Board Reports. (See report preceding county reports.)

The Chair—We will now hear from our ex-President, Hon. Edward Burrough. [Applause.]

PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN—I had thought that in laying down the duties and honors of the Presidency of the Board of Agriculture, which you so long conferred upon me, that I should escape the infliction upon you of another Annual Address, but your Executive Committee thought differently, and I am here at their bidding. You have been made familiar with most of the details of the work done since our last meeting by the reports of the committee and Secretary, and they should receive your earnest consideration. The extraordinary length of the legislative session imposed arduous labors on your Legislative Committee, who were indefatigable in their efforts to carry out your orders. As their report will set forth, this tardiness in the Legislature interfered greatly in the spring work of the Board, and it was not until June that the work was fairly under way, and the additional duties imposed upon the Board by legislative action taken up for enforcement; prominent of which was the selection of a Tuberculosis Commission, which occupied much time and consideration in inducing competent men to accept the position, which, however, was finally accomplished, and the work of the commission will be made known to you in their report.

TRESPASS.

I have at times heretofore called your attention to the necessity of having our trespass laws more plainly defined. Although some efforts have been made to amend them, yet they practically remain but little improved. During the last session of the Legislature a law was passed defining trespass as to fish ponds and providing a penalty for the same (see P. L. 1894, page 61), which should be amended so as to apply to all farm property outside the actual bounds of the public highways. The pilfering of fruit, vegetables and nuts, the tramp-

ing down of grass, grain and other crops, and the cutting of ornamental and shade trees, by these depredators, are becoming unbearable. Much of this is done by persons who would not think of helping themselves to apples, nuts and berries displayed in front of grocery stores or stalls in the city and village markets. Another law, passed last year, gives licensing powers to boroughs and municipal authorities, under which it is claimed that a farmer selling the produce of his own farm will be compelled to take out and pay for a license (see P. L. 1894, page 171). If such really is the object or is allowable under the law, it calls for redress and your early attention. A law of this character applied to residents of another State is a violation of the Inter-State Commerce law and cannot be enforced.

INSECTS.

The continued ravages by insects, and the frequent invasions of new and destructive species, warrant me in again reminding you of my recommendations of last year to have specimens of the destructive insects and their parasite enemies procured and protected by glass in portable cases, showing them side by side and have them exhibited at our County Board and Institute meetings, in order to familiarize our farmers and fruit-growers with them. I would also recommend that you use your influence with our State authorities in procuring, under direction of our State Entomologist, parasitic insects from whatever source they can be obtained, in order to exterminate as many of our insect pests as possible. This has been done in California, and I have but little doubt that something can be done to help us in New Jersey if proper methods are employed, but until something more effectual is found we must continue the use of insecticides and use the sprayer generously.

FORESTRY.

Our last Legislature, following the recommendations of the State Geologist and the sentiment of an intelligent class of citizens, passed a law to investigate the forest area of the State and lands better adapted to timber-growing than agriculture. As this subject has been before you and received your encouragement at various times and always with interest, I trust that you will extend

the State authorities your co-operation, and by so doing seek to bring into cultivation the fertile valleys and plains, leaving the mountains and rocky hillsides to forests and timber growths, for which they are better adapted. So rapidly has the interest in this subject developed, that during the early summer the New Jersey Forestry Association was organized, at a meeting called for that purpose at Riverton, and will soon be in working order with branches in the several counties, where its influence will be of great importance in sustaining and pointing out places of interest, and diffusing information of great value and efficiency in protecting our forests from wanton destruction. It seems to me that New Jersey might profitably follow the example of some of her sister States in securing State parks on the water-sheds of our State, that would prevent the destruction of some of our forests, preserve the sources of water-supply, and retain much of the natural beauty of the landscape.

AGRICULTURAL STATISTICS.

It is an acknowledged fact that agricultural statistics are a commercial necessity, and are probably more relied upon by financiers, merchants and bankers than by the farmers themselves, hence we see an agitation and demand for more accurate statements than are generally given to the public. The President, in his last annual message to Congress, made mention of this matter, and suggested that our agricultural census be taken just after the sowing and spring planting season. While I have no objections to the gathering of such statistics, I believe in the maxim of what is worth doing at all is worth doing well, and I would recommend the system now in vogue be abolished, and that when persons are called upon to furnish statistics that they be paid a fair compensation for the work, according to the value and accuracy of their reports. The idea of the government appointing one man in a State to collect and tabulate such reports and data as are furnished by his personal friends under the promise of having governmental publications sent them regularly as a compensation, is a virtual school of inaccuracy; the publications, if sent at all, embrace only such leaflets and bulletins as usually contain the figures the State officer sent, while the more expensive and valuable publications of the government are seldom to

be found in a farmer's mail. If these statistics are of any value they should be accurate, and to secure such, a competent person should be selected and paid for his time in making the census.

POTATOES.

At our last annual meeting I placed upon the tables some specimens of potatoes that I had secured at the Columbian Exposition. There were several new varieties among them that I desired to have tested in our State, and I resolved to attempt a comparative test of yield and value after securing a few additional new varieties. I engaged the services of Mr. D. D. Denise, of Monmouth, and Mr. Theodore F. D. Baker, of Cumberland, to assist me in the tests. These gentlemen manifested a deep interest in the matter, and we agreed upon a plan, but owing to the calamities of the season my own planting of the test plot was so much of a failure that no feature of a success could be secured from it. I have, however, placed upon the tables some specimens that were grown in the same field under like circumstances as my general planting of fourteen acres, and you are at liberty to make any deductions therefrom that you think of value; the gentlemen above mentioned will also submit to you the result of their attempt. The object of the test was to ascertain if possible the best of the early varieties and the best or most promising of the late varieties that were adapted to the soil and climate of our State. Whether it is worth while to continue the experimental test it is for you to decide, but you should take into consideration that such tests, to be valuable, require much time and attention and considerable labor; you cannot expect to receive any great advantage from them unless they are accurate, and the persons conducting the work should receive a suitable compensation. I have made two or three such tests and know whereof I speak.

TROLLEYS ON OUR COUNTRY HIGHWAYS.

The advent of electricity as a motive power has caused the formation of traction and other companies who are desirous of extending their lines into the rural districts and along our most public highways. With no disposition to prevent the progress and development of such territories, and having experienced the danger and expenses entailed upon farmers' wagons and of the traveling public generally,

I cheerfully united with the Executive Committee in issuing a circular of warning, and making suggestions as to the kind of rail and width of gauge that should be used whenever these roads are built upon or across our public highways. There is likely to be much legislation in the interest of these companies in the near future, and I would recommend that you instruct your Legislative Committee to look after your interest in this matter very carefully.

ROADS.

I feel it my duty to call your attention to the working of our General Township Road law. I consider it one of the best laws for general road purposes that we now have upon our statute-books, but as it is being enforced by many townships it is not fulfilling the object for which it was passed; but this is not the fault of the law, it is solely due to the manner of its enforcement, and you should bring this matter before your township meetings, and have the Township Committee instructed as to the work and method to be employed in appropriating the money you annually raise for road purposes. This law should be made to serve the purpose for which you intended it when you secured its passage. There is no doubt but that you can receive a far better return for the money now expended upon your roads if a more thorough and systematic method is generally pursued in their management.

EXPOSITIONS.

It is apparent that the agricultural display made at the Columbian Exposition has done much to make known the agricultural and horticultural possibilities of the State. I learn that another great International Cotton States Fair will be held in Atlanta, Ga., in October, and in connection therewith two other agricultural gatherings and a Road Parliament; also another that more nearly interests us at Baltimore in 1897. If you are not called upon to take part in these expositions you should instruct your executive officers to send delegates to attend them, and report such items of interest that may come to their notice. It was largely through this method of visiting fairs in neighboring States that our true agricultural position was ascertained, and the report of the delegates to the Provincial Fair in

Canada may serve to convince you of the advantages to be derived from such visits.

Thirty years have elapsed since I abandoned any ambition or aspiration that I had for a military, commercial or professional career ; and in order to secure a home for a widowed mother and young sister, took up the business of farming on the farm where I was born and raised. It was at the close of the period of inflated prices of farm products, incident to four years of costly and bloody civil war. Almost everything started on a downward grade, and on looking back over the three decades, it seems that the downward scale has continued with but little intermission to the present time ; and the contrast is even greater than I anticipated. In 1866, I sold my crop of 400 bushels of wheat at \$3 per bushel ; and the last bushel of wheat that I sold three years ago, I got 60 cents for. In 1866, I sold 200 bushels of corn at \$1.08 per bushel, and I bought 100 bushels, delivered at my place last fall, at 50 cents per bushel. In 1866, potatoes sold for \$1.25 per five-eighths bushel for early varieties, down to 40 cents for late varieties, for the same size baskets ; at the latter figures I refused to sell, waiting for prices to advance You are familiar with present prices. It is not my intention to contrast the past with the present, and have only alluded to the above as somewhat remarkable. At that time farmers in general occupied an isolated and somewhat selfish position in society ; there were but two or three farmers' clubs in the State, and a Grange or a Board of Agriculture was unknown. I felt the need of information and instruction, and began to search through books for what I needed ; but the book-farming of that day did not suit me. Agricultural papers gave me the best food for thought. I felt the necessity of a change in the condition and daily life on the farm ; I knew that the business was an honorable one, and I felt that I could and should be as much of a gentleman while being a farmer as I could be in other walks of life, and I resolved that in seeking assistance and encouragement from my brother farmers, that I would also try and assist them. On consulting with others similarly situated, I found they were equally convinced of the necessity of organization, and soon after farmers' clubs and associations became more numerous and demonstrated their usefulness in their respective localities. Soon a committee was appointed to visit neighboring clubs, and an interchange of courtesies began which prepared the field for the Patrons of Husbandry in 1874. At

the beginning of the organization of farmers, the members came from the field, the road and the dairy, unshaven, rough, and in soiled garments, and in some instances it seemed as though each vied with his neighbor as to who could present the most uncouth appearance; but farmers soon discovered that if they wished to be respected, they must deserve respect, and they soon learned to respect themselves and their calling, and to-day you will find as intelligent, respectable and gentlemanly a body of men at our farmers' meetings as in any other calling. I make no claims as to having done more than many others, to bring this condition of things about. I tried to do my part, and fulfill the task assigned me to the best of my ability. Having been actively engaged in the work for over a quarter of a century, it is but natural that I should feel a little proud of the present character and standing of the farmers of New Jersey.

YOUNG MEN.

In the course of my duties as President of the Board, and as Commissioner of Public Roads, I have noticed that there is a generation of intelligent, energetic young men who are entering upon an agricultural course of life; these men are full of hope and determination to make for themselves a home and a subsistence for their families. On these men rests the future of the agriculture of New Jersey—they are seeking information and practical examples for their guidance, and they deserve and should receive the encouragement and support of those who are now on the middle arches of the bridge of life, and I earnestly ask for them your assistance and advice; take an interest in them and in their work; invite them to visit your farms; show them your successes and failures, and stimulate them to imitate your example; invite them to attend the meetings of your State Board, County Boards and Institutes. I regard this element as a very important factor in the development of the State, and I feel that there is an opportunity opening for them. Our best farm lands can be purchased at a very reasonable price; their location and the advent of permanent, improved highways, the protection afforded by our Experiment Stations, all tend to attract enterprising and intelligent young men to the farm. Do not neglect or overlook these men. Hold up their hands, so that when they, as we, approach the end of their journey, they may take a look backward and remember

you and your associations with satisfaction, and speak of your cause as a noble one. You can do much to mould their course of life and have them build up a progressive state of society, both morally and socially. And as I close my official life with you, I appeal to you, as a parting salutation, to help your young farmers.

RESIGNATION AND FAREWELL REMARKS.

Your Board of Agriculture was organized in 1873, with ex-Governor Joel Parker as President and the late Dr. George H. Cook, Secretary. It was my privilege to be present at the second meeting, when ex-Governor William A. Newell was elected President, and I cannot recall an annual meeting since then that I have not been in attendance at some time during the session. I have witnessed its continued advancement, and recollect how long and tedious it seemed to be in getting active and practical farmers interested in its sessions. In 1875 Dr. Cook resigned the secretaryship, and P. T. Quinn was elected, and soon after Prof. Geo. W. Atherton and Chalkley Albertson were made members of the Executive Committee, and there seemed more interest taken, and it was manifest that there was a demand for practical information. In 1878 Thomas T. Kinney was elected President. He was anxious to secure the services of earnest, practical farmers as Executive Committeemen, but owing to the peculiar features of the law the election of officers was confined to a particular class, made up of the members of the several State Boards and Societies. He emphatically asserted that if the law would admit none but office-holding farmers to become members, that it should be made to do so, and by his advice and the influence of Professor Atherton a new law was drawn and passed which gave new life to the Board, and Mr. Quinn bent his energies to the work, and the advance began. In 1880 Hon. Thomas H. Dudley was elected President, and new members of the Executive Committee were also added, and the efforts put forth brought rich returns. In 1882 I was placed on the Executive Committee, a position I held until 1886, when you elevated me to succeed Mr. Dudley as President, and at the same time elected William S. Taylor, Secretary, and Franklin Dye, Treasurer, and gave me the assistance of a thoroughly-alive and progressive Executive Committee. From that time until the present the work has been

under your personal supervision, and you are familiar with its every detail. I feel that substantial progress has been made. You soon found it impossible to diffuse the knowledge and information needed by farmers in their several branches as rapidly as the necessities of the situation demanded, and, realizing that it was impossible to bring all the farmers to your annual meeting, you have gone to them by creating County Boards as a co-ordinate branch of the State Board, and also, wherever the demand warrants, to hold Institutes, which are the real schools of progressive agriculture, and in some instances even these fail to give the information as fully and concisely as desired, and University Extension lectures are being held to advance the study of special subjects.

It is but just that I should now turn to my cabinet officers, so as to speak and address you through them, as a mark of my high appreciation of their courage, skill and unselfish loyalty and fidelity to me and your interest, and in thus retiring from the position in which you have honored me so long, I do so with the kindest feelings for the members of the Executive Committee, individually, and every member of the Board. You have labored with me faithfully, honestly, unselfishly and perseveringly for the best interest of the Board and the agricultural interest of the State. You have raised the standard of the agriculture of New Jersey higher than that of any sister State. You have advanced her position in all that tends to reveal her true value and the superiority of her institutions, until your advice is now sought and your methods examined by letters of inquiry and by delegations from other States. By your wisdom and foresight you have placed upon the statute-books three of the best Road laws in the United States. You have devised and placed into practical operation the feasibility of granting State aid to public roads, a position so far in advance of all other States that have attempted it that a constant inquiry is being made for information concerning our laws and their enforcement. You were largely instrumental in creating the State Experiment Station, the second of the kind in the Union, and the names of Dr. George H. Cook and Hon. Thomas H. Dudley, and one or two others, should be placed upon the records of that institution in letters of gold. You sustained and protected this institution during its most trying ordeal (and on more than one occasion preserved its life), until to-day it is one of the strongest and most popu-

lar and useful institutions of the State, and rivals any in the nation. You have placed yourselves again in the advance by demanding agricultural education in the common schools and free mail delivery in rural districts and at farm homes. You have recognized the necessity of protecting our forests from fires and the utilization of our waste mountain lands for forestry. You were instrumental in the appointment of a State Botanist and State Entomologist, and of teaching the farmers and fruit-growers of the State the great value of such officers. I have alluded to only a few of the most notable of your achievements, being fully aware that scarcely an advance in the welfare of the State has been made without your approval and assistance.

Your efforts on behalf of the State at the Columbian Exposition were a revelation to our sister States, and the name and resources of New Jersey are no longer unknown and unhonored. They have been carried to foreign lands, as your correspondence confirms. There is still much for you to do. The inauguration of a new agriculture for New Jersey demands your constant thoughtfulness and energy. Push on, inquire, examine, investigate and experiment. Keep your progressive banner to the front, having for a motto something like this—"Organization, education and recognition of farmers' rights." I feel confident that you will extend my successor the same courtesies and assistance that you have so generously given me; and let me assure you that whatever may be my future in this life, I shall always look upon the score of years that I have been actively connected with the Board of Agriculture and the nine years that I was honored with the presidency thereof, as the most useful position of my life. I have no desire to retire from membership in the Board, but other duties lately imposed upon me and the constantly-increasing labors devolving on the President of the Board of Agriculture, render it necessary that I should, in justice to myself and to the Board, ask to be relieved of its duties and responsibilities, being conscious of the number of members of the Board who have the ability not only to fill the office of President but to carry onward and broaden the field of usefulness and prosperity of New Jersey's State Board of Agriculture.

In severing myself from what has always been a labor of love, it has cost a pang. The termination of associations that have been so pleasant and profitable, to me at least, cannot be done without feelings

of sadness. I thank you, as a committee and as individuals, and the Board itself, for the honors you have bestowed and the kindness you have always manifested towards me.

Gentlemen, I bid you officially farewell.

With a grateful remembrance, I remain as ever your friend,

EDWARD BURROUGH.

On motion, the report was referred to the Committee on Officers' Reports.

The Secretary—For three or four years I have been hunting for a Jerseyman to talk on the subject of pork-raising. I am glad to say I have found a man and he comes next on the programme.

The Chair—I take pleasure in introducing to the Board Mr. Gillingham, of Moorestown, who will talk to you about the pork industry.

REARING AND MANAGEMENT OF SWINE FOR THE
GREATEST PROFIT.

BY GEORGE L. GILLINGHAM, MOORESTOWN, N. J.

All history and tradition shows the flesh of swine has from the earliest period been used in a greater or less degree by man for food. In fact, it is in the United States a staple article of consumption in nearly every household. The extent of this industry and the great importance which it holds to the farming community of this country can in no better way be demonstrated than by citing a few facts and figures for your consideration. Statistics show that in the year 1894 there were in the United States 45,206,498 hogs; and among the farmers of the West and South this industry is made the medium for marketing the extensive corn crop, and at the present time a portion of the wheat crop of our Middle, Southern and Western States; and in our little State of New Jersey alone there were 182,830, showing to what extent this branch is already carried on in connection with the growing of fruit and vegetables for the markets; therefore, anyone can readily understand what a source of income this branch of New Jersey farming can become if properly managed. The small cost of rearing, their fecundity and wonderful power of thrift, with so little attention, render them almost indispensable to the farming community; and, as in our country the hog is the only domestic ani-

mal reared and fed for meat alone, it must be apparent to every breeder of this useful and now almost indispensable creature that the standard of excellence be brought as near to perfection as is possible to attain. Then the sole aim of the intelligent farmer must be to make them as perfect machines for converting corn and feed, as well as the waste products of our fruit and truck farms, into pork and lard as the health and vigor of the animal will admit of ; in short, to obtain a breed of hogs that will produce the largest and best amount of pork from a given amount of feed in the shortest possible time and with least expense and risk. In order to secure these ends it is necessary for the farmer to keep those breeds that combine early maturity, rapid and large growth, aptitude to fatten at any age, good health, a vigorous appetite and quiet disposition.

In fact, a good appetite and great powers of assimilation are the groundwork of rapid growth and profitable pork-making, and the farmer who keeps these things in view and acts accordingly will not go far astray.

Therefore, in starting in the rearing of swine it is necessary to start right, and in this connection comes the selection of breeds. At the present time the darker breeds seem to be sought after more by the pork butchers, from the fact that their meat is better marbled and seems to run more to lean, while some others, notably the Jersey Reds, run more to fat, and hence have to be cut more into lard, not leaving as much for sausage and other purposes. The Jersey Red is a very good and a popular breed with a great many, as they are hardy and prolific, docile and good feeders, but do not mature early. Some of the darker breeds, such as the Berkshire and Poland China, mature much more quickly, are equally as hardy, are good grazers and will fatten at any age. The Berkshire is not so quiet as the Poland China, having more of a roving and uneasy disposition, and hence will not fatten as readily or with as small amount of food.

The Chester White, Yorkshire and Cheshire are also very good breeds, the Chester White being almost identical with the Poland China except in color ; but many object to the color, as a white hog is much more liable to mange in winter and sunburn in very hot weather unless furnished with plenty of shade, while a dark hog is seldom if ever affected in this way.

It is not always possible or even practicable for us all to keep pure breeds, but we should either keep the pure breeds of whatever par-

ticular one we decide on, or their crosses, being careful to have pure blood on one side, most important of which is the sire.

I would advocate keeping no hogs over winter except for breeding purposes, as I think we often feed a pen of young hogs or shotes during an entire winter, and if we have much cold, wet or inclement weather, we can house and take as good care of them as we can, yet they make but little growth during that time; hence, does it not stand to reason that a large proportion of the food consumed during the cold weather has been wasted?

In every animal it requires a certain amount of food to keep up the animal heat of the body, and all that is left goes to growth. In the summer season very little is required for this purpose, while in the winter season it is often very great, and requires the most careful care and watchfulness on the part of the farmer to make any gain.

If, however, our pigs are born in March or April, and forced or fed liberally all summer, and killed when eight or nine months old, they can be made to dress from 200 to 250 pounds each, and you will find your pork has cost you less by leaving the feed in the bin during the winter and feeding it out during the warm or summer months, when but very little will be required to keep up the animal heat. Besides, we must not lose sight of the fact that the hog is a grazing animal and should have the run of a good clover or blue grass pasture, which, in connection with other feed, will make them grow very rapidly. This, of course, they cannot have in winter.

The best place, however, for a hog pasture is in an orchard, as they have the shade during the day, and are a great benefit to the trees by picking up all fallen fruit early in the season and thereby destroying the codling moth, curculio and other injurious insects.

Having spoken of the spring pig, let us start with him as he starts in life. We have had his mother in separate inclosure, with a warm and comfortable sleeping apartment for a week or ten days, and after finding him and his companions, we will not allow the mother any food for twenty-four hours, or nearly so. She should then have a few quarts of warm water in which has been stirred a quart of fine wheat bran or middlings; this should be gradually increased, until the pigs are about a week old, when she can have all she will eat up clean three times a day of good swill, made of wheat bran, middlings or ground wheat, with an addition of a small handful of linseed meal. In addition to this she can have an ear or two of corn twice a day after

the pigs are a week or ten days old, but see that she cleans up all her feed each meal; if not, slack off at once, until she does, as nothing is more conducive to a small flow of milk than overfeeding, causing indigestion and other injurious effects. If by this high feeding the pigs are found to have diarrhoea, the mother should have a tablespoonful of sulphur twice a day and the bedding cleaned out each day and replaced with fresh; also let the pigs have some dry shelled corn, if old enough to eat it. When they are about four weeks old, or as soon as they will begin to eat, they should have a small pen adjacent to the mother, the opening of which will not admit her, where they should be fed all they will eat. In addition to her milk, the best food I have found to start on is soaked corn—soaked twelve hours in hot weather or twenty-four in cool weather. This should be kept in the trough, where they can have free access to it, and you will be surprised to find how often they will call on you to refill it. After they get a few weeks older they should have good swill in addition, with all the skim milk you have to spare. With this treatment they will be ready to wean at eight weeks old, or can be allowed to run with the dam till twelve weeks old, if you are so situated you can, as the extra four weeks will make a great addition to their growth. This may appear to be very hard on the dam, but it will be found, if she is well fed, as well as the pigs, they will gradually cease to depend so much on her, depending more on the other feed furnished them, and will in some cases wean themselves, causing no set-back to them and no detriment to her. After weaning the same system of feeding should be continued, except diminish the corn and increase the other feed, as too much corn is not good for their health in hot weather, allowing a run of good pasture till fall, when they can be put up and fed on corn and good swill, gradually increasing the corn and decreasing the swill until the last month, when they can be finished on corn and pure water to drink. This is the system we have practiced for several years while our wheat was worth sufficient to warrant us in selling rather than feeding, but since wheat has become lower than corn in price, we are feeding wheat instead of so much corn and in place of the middlings, which we find to pay us quite as well, as the hogs make quite as good if not better growth, and I believe will fatten on it exclusively, and leave more margin for the farmer at the present price of pork, than selling wheat at less than 60 cents per bushel. In order to test this for my own benefit I entered into an experiment last fall, the result

of which I will give. Taking a sow about a year and a half old, after raising a litter of pigs and while still quite thin in flesh, she was weighed on September 10th, weighing 216 pounds; she was then fed on ground wheat exclusively, adding water sufficient to make a thick slop. After feeding in this way for forty days, or till October 20th, she was again weighed and found to weigh 320 pounds, making a gain of 104 pounds. She consumed during the forty days, eight bushels of wheat, less the toll taken for grinding, which, however, will have to be charged to her, as it was ground on her account, showing a gain of thirteen pounds for each bushel of wheat. Had she been killed at that time, the pork would have sold for 7 cents per pound, or 91 cents per bushel for the wheat. The experiment was continued for twenty-seven days longer, and again weighed on the morning of November 17th, weighing 366 pounds, making a gain of forty-six pounds in the last twenty-seven days, or a total gain in sixty-seven days of 150 pounds. During the last twenty-seven days she consumed five bushels, from which she gained only nine pounds per bushel, total number of bushels fed thirteen, showing an average of eleven and a half pounds per bushel during the entire period. She was killed on November 17th and sold for 6 cents per pound, making 69 cents per bushel for the wheat consumed during the entire period. She dressed 302 pounds, losing but sixty-four pounds, or a small fraction over seventeen pounds per hundred. Thus we see this experiment demonstrates three facts:

1. It pays better to feed wheat to hogs and sell it in pork than to sell it for less than 60 cents.

2. Wheat will not only make as much pork as corn, but will make it just as solid or this hog would have lost more than seventeen pounds between live and dressed weight, as there is always more loss with sows of this kind than with other hogs, while twenty pounds is the loss generally claimed by the butchers.

3. This experiment demonstrates another very important fact to the pork-grower, that there is a point wherein we feed at a profit, and after that point is reached we often feed at a loss, as in this case, for although she made a gain of thirteen pounds per bushel for the first period of forty days, it took nearly all the profit of that to make up for the loss of the second period of twenty-seven days, when she made a gain of only nine pounds per bushel. It is true it is not always possible to ascertain just when this point is reached,

the rise and fall in price often making a great difference, also the manner in which the hogs are feeding. But the skillful feeder can generally decide about when this point is reached.

Many farmers in our State follow trucking and fruit-growing, and there is necessarily much waste fruit and vegetables that will not bring paying prices in the markets, and upon which we cannot place any definite value; most of these will be readily eaten by the hogs and save much grain food, and we will receive much more net profit by allowing them to consume these waste products, the profit being in proportion to the amount of these consumed.

After weaning the pigs, if you are desirous of killing the sows in the fall, they should be fed well in addition to pasture and these waste products, and will be fat very early, when pork usually commands the highest price, and will be out of the way of the spring pigs, which may be fattened and killed later, and will make the very best of pork for the farmer's own use, selling all that is not needed for that purpose. If, however, you do not expect to kill them that fall, but expect to keep them over for another year, they need not be fed after the pigs are weaned, for if they are of the breed that are good grazers, with good pasture in connection with the waste products above mentioned, and pure water to drink, will keep in good condition, and be fully fat enough to winter. My experience has been that this is preferable to saving young stock from the spring litters each year. Of course it will be found best to save one or more young ones each year to replace any that may have to be disposed of.

I think farmers, as a rule, make a great mistake in raising their hogs from stock that is not mature; it causes their stock to degenerate, become dwarfed and stunted in growth, and much more susceptible to disease of all kinds. Whereas if we had all our breeding stock fully matured, the young would be larger and stronger, start off to grow more rapidly, would be able to resist any or all disease to a very great extent and prove more satisfactory as well as more profitable in every way.

For this reason, no sow should be allowed to farrow under one year old, and if found to be a kind and profitable mother, should be kept for that purpose as long as she continues so.

All your breeding stock should be kept gentle and accustomed to your presence, which can readily be done by going among them at frequent intervals and treating them kindly at all times. If you

have any that will not respond to such treatment they should not be kept, as your presence is absolutely needed at times, and to withhold it would be fatal to your best interest, and would make the profit on the wrong side of the ledger. If we lose a calf, we milk the cow; if we lose a colt, we work the dam, but when we lose a fine litter of pigs it is a total loss. If, however, you find your presence is not needed at farrowing-time, they should be left alone as much as possible for the first twenty-four hours.

In wintering the breeding stock, allow them all the room for exercise you can afford—in fact, if fed very high they will often not take enough—as free exercise in the open air, coupled with proper food, is very important for pregnant sows, creating an abundance of strong, healthy, life-giving blood, flowing through the proper channels, to develop the coming offspring, causing them to come into the world strong and vigorous, and is one of the essential features of profitable pork-making, while, if closely confined in small, poorly-ventilated pens, the opposite conditions will result. The young will be more apt to be born in a weak and delicate condition and will frequently, if the weather is cold or inclement, perish before reaching the source of nourishment. If the sows can be allowed the run of the pasture, all the better, as they graze very close and will find much outside whenever the snow is off the ground. A patch of early-sown rye will be greatly relished and will go far towards wintering a herd of hogs. If, for greater economy in making and saving manure, you keep them penned, avoid feeding too much corn. Feed more vegetables or refuse fruit. Small potatoes, cabbage, turnips or other vegetables boiled and mixed with ground wheat or bran, would be relished and will be very beneficial; also clover hay, the best form of which is clover-heads gathered up from the barn floor or feed entry, where hay is thrown down for other stock. This will be found, with the wheat and bran, to be excellent for the growth and formation of bone. Keep the pens dry, with good, clean litter, and allow ample sleeping room, to avoid crowding, which frequently leads to bad results.

It is scarcely worth while for me to take your time in describing how to make a suitable pen. We are speaking from the farmer's standpoint and for the greatest profit to be derived from this industry to the ordinary farmer rather than that of the fancy breeder. Therefore, almost any farmer handy with a saw and hatchet can make a

pen suitable to his own needs, and for the greatest economy and profit, will not go to a very great expense.

The principal needs are warmth and dryness, and for this reason the pens should face the south or southeast, with a good plank floor close to the ground to keep the winds from blowing under, and be provided with a good, tight roof, with one or two facing boards on the front or open side to keep out all storms. Connected with this should be an outer pen or yard, the size of which, as well as the other pen, will depend upon the size of the herd. This can be used for exercise for hogs kept up in winter, and into it can be thrown fence trimmings and other refuse material, which will thereby be converted into a valuable fertilizer.

It is also necessary to have a shelter of some kind in the pasture, both for the breeding stock as well as for other hogs. This can also be easily constructed, and should be made on runners, that it may be moved to any part of the farm by one horse at any time.

Around the inside of every pen used for a sow with very young pigs should be placed a board or slat about three inches wide and about six inches from the floor, for protection to the young pigs, as they are often crushed against the side of the pen. This arrangement will prevent this, as they can escape under this slat and crawl out at either end, and you will be surprised to learn how soon they will find this place of safety.

Breeding sows, and in fact all hogs, seem to require a certain amount of mineral elements to assist digestion, by counteracting the acidity of the stomach, and unless hogs closely penned are supplied with something of the kind they will soon lose their appetites and cease to feed as they should, and in some cases lose rather than gain. While running on pasture and having free access to the soil, they do not require it so much, yet should be able to get it when they need it.

A very good mixture for the purpose is one for preserving the health of swine, given by Mr. A. C. Moore, a noted breeder of swine of Canton, Ill., and is as follows: Three bushels wood ashes, one bushel charcoal, small pieces; one-half bushel slaked lime, one bushel fine salt, two pounds Spanish brown, five pounds sulphur, one-half pound copperas and one-quarter pound saltpeter. Pulverize the last two thoroughly, mix in a bin or box and keep it in an open trough where the hogs can have free access to it.

Aim to keep these articles on hand at all times, and do not neglect

their use, and particularly if you have disease among your herd, or if there is any disease in your neighborhood, as they contain elements that are wanting in every hog predisposed to disease.

You will soon observe by careful watching that those that look the worst, or with a slight cough, and with which as you say there seems to be something the matter, are the ones that will call on you to fill this trough the oftenest, and they will usually visit it as they go to or return from their feed.

In treating of disease, I have found the old adage a true one, that an ounce of prevention is better than a pound of cure. In fact, I have found it so true that having had so little disease, I cannot speak intelligently of remedies, but more of preventives. We endeavor to keep the mixture on hand, and make good use of it, and whenever there is any disease in the vicinity, or when going to fairs and coming in contact with other herds, we always use sulphur and black antimony, in proportion of one pound of sulphur to four ounces of antimony, as a preventive, giving a teaspoonful to each adult hog, twice a day for a few days, dropping to one a day for a week or ten days, and have in this way kept free of hog cholera or swine plague, although having come in almost direct contact with it.

There is, however, one very fatal malady, I will call it rather than disease, which is thumps, in very young pigs, and in no place is this ounce of prevention more true than in this; in fact, in my experience, it has proved doubly so.

Watch your litters very closely for at least two weeks, for the first symptoms, particularly in cold or rough weather, when they stay close to their beds.

When they are three or four days old, clean out the old bed and renew; never allow it to become very dry or dusty. If you see any signs of short breathing, or abnormal development of the chest or jowl, drive them out of their beds once or twice a day into the fresh air, and make them take some exercise; do not lose sight of this word "*exercise*," for prevention of thumps, for if once thoroughly seated, it is seldom if ever cured. If you find, when about a week old, some are getting very fat and you begin to feel quite proud of them, these are the ones to watch, as they are always taken first. Thumps are more particularly confined to the spring litters, that are liable to spend most of the time closely huddled up in their beds and

take no exercise. In summer and fall they are more apt to follow the mother around the lot, breathe more fresh air, and have access to the mineral elements in the soil, yet should also be furnished with the mixture, and will begin to eat it while very young.

By following these preventive measures, in both our young and older hogs, I feel confident we can reduce our losses from disease to a minimum.

On motion, a vote of thanks was extended to Mr. Gillingham for his interesting and valuable paper, and the same was referred to the Executive Committee for publication.

Mr. Matthews—I do not wish to criticise this valuable paper, but there is one thing I would like to ask: If the dam destroys the young, is there any preventive? I understand you to say in your paper that when the young are a few days old you give her a very light ration. This seems the opposite of our experience. The dam should be fed lightly, but she should have plenty of it, to prevent her from eating her young. Have you discovered anything in the way of a preventive?

Mr. Gillingham—This eating of the young is brought on by the feverish condition of the dam and from want of proper exercise. Exercise is very important before the time of farrowing. If she is properly fed with cooling food beforehand for two weeks and has plenty of exercise, she will not have that morbid appetite and won't want to eat her young. If cooling food will not remedy it, give her all the meat she will eat—salt pork will do. If the pigs are crushed, they should be removed at once, or she may eat them, and this will learn her to eat the living pigs.

Mr. Matthews—You also say that a light-colored hog will stand the heat better than a dark one.

Mr. Gillingham—They will not sunburn so readily, although they will sometimes sunburn if not provided with sufficient shade.

Mr. Reed—Do your pigs eat clover hay without trouble?

Mr. Gillingham—If there is snow on the ground they eat it readily. If they can get grass they take that in preference, of course. I never give this to fattening hogs. I only give it for the health of the offspring.

Mr. Reed—Don't you find the corn better than wheat? Is it not better for the strength of the pigs?

Mr. Gillingham—That has not been my experience. I think the wheat as good as the corn.

Mr. Reed—Would you not get stronger bones?

Mr. Gillingham—I think not.

Mr. Reed—We think they stand up better on corn alone.

Mr. Roberts—I think almost any hog will eat clover hay in the winter-time, if he has the opportunity. I had a lot of hogs in the barnyard, and undertook to show a friend how anxious the cattle were to eat our clover hay, and I was surprised to see how greedy the hogs were after it.

The Chair—We will call for Mr. Baker's report on his experience with the World's Fair potatoes.

REPORT ON WORLD'S FAIR POTATOES.

During the World's Fair at Chicago, our worthy President, as usual, on the alert for new ideas and progressive methods, conceived the idea of testing the comparative yield and qualities of the various potatoes on exhibition. As a result of this inspiration the seed of the several varieties was equally divided between three of the members of the Board. The test stipulated to be conducted the same in every particular as was the general crop grown for market or home use, as the case might be.

The result of this experiment is on exhibition on the tables before you for your inspection.

While the results have not been very satisfactory pecuniarily, and do not show large specimens, there are some points of interest and benefit from the experiment which was conducted in the three counties of Camden, Monmouth and Cumberland, giving a wide range of both soil and conditions, which are worthy of your careful thought and investigation.

The experiment in Cumberland was conducted and the results obtained as follows:

April 17th, prepared one acre for the potatoes by applying 800 pounds of fertilizer, broadcast, per acre, well harrowed down. Fertilizer showed an analysis of ten per cent. phosphoric acid, six per cent. potash and five per cent. ammonia. Furrows were then opened three feet apart, with a double mould-board plow, as deep as the soil would permit. The seed was dropped in these furrows fifteen

inches apart and covered with about two inches of soil with one-horse cultivator, passing once on the ridge between the rows.

On the 18th, 650 pounds more of the same fertilizer were applied in the furrows over the potatoes, and the plot then harrowed nearly level with Acme harrow both ways, covering up the fertilizer and potatoes deeper.

May 12th the potatoes were well up and were harrowed as the first cultivation. Continued downpour of rain prevented any further cultivation until May 29th, when the hoe-harrow was used to mellow up the soil. The 30th and 31st were rainy and packed down the soil again. From May 5th to June 1st, 15.61 inches of rain fell, allowing but little cultivation among growing crops. June 4th the hoe-harrow was again used to cultivate the potatoes. No rain fell from this time until August 3d. August 8th the potatoes were dug and proved the poorest crop I ever grew; drouth ruined what otherwise would have been a good crop from the manner the potatoes were set.

The product of the varieties tested from ten hills as a standard for each variety, and weighed at time of digging, gave the following results: Planted 3 feet by 15 inches, gives 1,188 hills per acre, with the amount of each ten hills increased $118\frac{2}{3}$ times for the acre, the entire crop of culls and prime potatoes of 60 pounds per bushel.

World's Fair.....	Crop	$50\frac{2}{3}$	bushels, 17	bushels	Prime.
Signal	"	$70\frac{1}{3}$	"	46	" "
Arizona.....	"	40	"	13	" "
Queen of the Valley.....	"	30	"	10	" "
Cream City.....	"	80	"	60	" "
Potentate	"	$40\frac{2}{3}$	"	13	" "
Penn Yan.....	"	$20\frac{1}{2}$	"	2	" "
Early Northerner	"	$70\frac{1}{3}$	"	36	" "
Crane's June Eating	"	$40\frac{2}{3}$	"	20	" "
Early Mercerner.....	"	$20\frac{1}{2}$	"	4	" "
Early Hebron.....	"	$80\frac{1}{3}$	"	54	" "
Early Ohio	"	$40\frac{1}{2}$	"	21	" "
Early Sunrise	"	$20\frac{2}{3}$	"	5	" "
American Wonder.....	"	$50\frac{2}{3}$	"	30	" "
Clay Rose.....	"	$60\frac{1}{2}$	"	36	" "
Late Puritan.....	"	100	"	66	" "
Victor Rose.....	"	$70\frac{1}{3}$	"	58	" "
White Star.....	"	$30\frac{1}{2}$	"	5	" "
Ohio Junior.....	"	50	"	28	" "
Freeman.....	"	$20\frac{1}{2}$	"	6	" "

STATE BOARD OF AGRICULTURE.

Troy Seedling.....	Crop	50	bushels,	13	bushels,	Prime..
Rural Blush.....	"	40 $\frac{1}{2}$	"	27	"	"
American Giant.....	"	50	"	20	"	"
Penn Rose.....	"	40	"	19	"	"
New Queen.....	"	40 $\frac{2}{3}$	"	7	"	"
Lippincott (not named).....	"	90 $\frac{1}{5}$	"	77	"	"
Early McMorris.....	"	80 $\frac{1}{3}$	"	40	"	"
Mammoth Pearl.....	"	98	"	70	"	"
Polaris.....	"	50	"	20	"	"
Rural New Yorker (No. 2).....	"	70 $\frac{2}{3}$	"	47	"	"
Early Rose.....	"	80 $\frac{1}{3}$	"	20	"	"

The Secretary—Were the results worth the trouble?

Mr. Baker—It showed some wonderful results in the yields. I found a number of the different varieties that paid for the cost.

Mr. Roberts—Taking the quality into consideration, which was the best crop?

Mr. Baker—The Early Rose.

Mr. Roberts—They only yielded twenty bushels to the acre?

Mr. Baker—That was on account of the drouth.

Mr. Lewis—What kind of soil?

Mr. Baker—A sandy loam.

Mr. Roberts—I think the experiment is very satisfactory if we consider the drouth.

Mr. Matthews—How about the Late Puritan? Is it similar to the Early Puritan?

Mr. Baker—I think it is not the same.

Mr. Applegate—Did you notice whether the early-setting varieties stood the effects of the drouth better than the late varieties?

Mr. Baker—I think the result showed the contrary. I think the later varieties were better for that reason. Take the Mammoth Pearl, for instance, which did not set as heavily as the early varieties. The dry weather prevented them from maturing.

Mr. Applegate—I drew that conclusion from your statement that you considered the Early Rose better than the later varieties.

Mr. Meech—Have any experiments been made for the purpose of determining the value of different fertilizers?

Mr. Baker—Not to my knowledge.

A vote of thanks was tendered Mr. Baker for the report of his valuable experiments in this line.

On motion, adjourned until 7:15 P. M.

FIRST DAY.

EVENING SESSION.

Mr. Lippincott, in the Chair—I take pleasure in introducing to the Board Professor J. B. Smith, State Entomologist.

Professor Smith then read the following paper :

NURSERIES AS FACTORS IN THE DISTRIBUTION OF INJURIOUS
INSECTS.

Mr. President and Gentlemen—Let me first of all disclaim any hostility to nurseries or nurserymen. I have none, and have nothing but admiration for the enterprise and energy which are displayed by nurserymen in carrying on their business. But it is well that we should look, not only at the advantages that nurseries give us, but also at some of the dangers that are involved in the way the business is carried on at the present time.

The question that of all others is most usually asked of the entomologist by the farmer is, How is it that we get so many new insects nowadays to bother us? It is easy to point out in many cases that the farmer himself is responsible by changing natural conditions; by cultivating in such a way as to destroy the hiding or breeding-places of predaceous insects or insectivorous animals; by planting so as to favor the increase of destructive forms and by rotating so as to expose himself to the greatest possible chances of injury. But this does not by any manner of means cover the whole ground.

Farming to-day is by no means the elementary occupation which it was deemed even a comparatively few years ago; it has become a veritable science, subdivided into many branches, any one of which may require a lifetime to master thoroughly. Of these branches none is of more importance than horticulture or fruit-farming. None offers larger rewards for success, and, on the other hand, none is beset with so many difficulties. No two farms are exactly alike in physical characters, and in some regions in our State several different kinds of soil may exist on even a single farm. Experience has taught us that fruits are often capricious, and what does well in one locality is often useless in another. Varieties, especially those improved or

procured by cultivation, are often far from uniform in different localities, and the fruit-grower is constantly on the watch for something just suitable to his condition. But not only his soil must be consulted: his market and its tastes are of yet greater importance, and even the distance which must be covered by the produce before it reaches the consumer must be taken into consideration. All this necessitates a large and increasing number of varieties, and to secure, produce, test and distribute these is the province of the nursery. It is a high province: it is one that is of the utmost importance to the farmer and the nursery, and the function that it follows is absolutely necessary to the present condition of farming, and particularly that branch which deals in the production of fruits large and small, using the term fruit in its widest sense. Instead of being compelled to plant the seed from a crossing, the farmer buys a plant or tree, saving from two to four years between planting and fruiting, and obtaining varieties otherwise beyond his reach. The nurseryman, to furnish varieties, searches not only his own locality, but other States and other countries, seeking not only for form, size, flavor and shipping qualities, but nowadays also for such as are blight or insect-proof. It is in this seeking after new and foreign varieties, eminently proper as it is, that there lurks a danger often greater than any possible benefit. When a single definite object is in view, very frequently all other points are forgotten, and where a single good quality exists, that often furnishes the leading reason for the cultivation or propagation of the variety, all other qualities, good or bad, being for the time subordinate. In avoiding one danger, however, we may unwittingly, if we are not careful, run into a dozen others. Local circumstances have produced in all countries not only different forms of vegetation, but also of insect life. Under ordinary circumstances, natural barriers prevent undue increase and spread of vegetable and insect life. In other words, insects and plants are properly adapted in their relations to each other, and nature has, in time, produced a balance which remains practically permanent. It may be disturbed for a time by local conditions, but it always swings back again sooner or later and becomes re-established, so that, in the long run, about the same measure of increase will be maintained and the same ratio will exist between a plant and its enemies. But the fact that such a balance exists in one locality does not mean that you cannot transplant either plants or animals into other localities, in which they will

do as well or even better. The very last thing that occurs to the exporter or importer of trees selected for some supposed or actual good quality, is an examination to ascertain whether the plants are free from insects, and even were they so prominently present that they could not be overlooked, yet in the rarest cases would the plants be cleaned. This is not a fancy sketch, unfortunately; experience has proved that it happens altogether too often. The practical result is that, in addition to the enemies of horticulture, both insect and plant diseases, that exist in the localities in which the plants are set, we get, also, a series of insects and plant diseases which are brought from other States or other countries.

Now let us see what the effect of that must be. I have stated that under natural conditions the balance between a plant and its enemies is fairly well established. Suppose we disturb that: suppose we take a plant out of its natural conditions and transfer it to some new locality in which the conditions are equally favorable for its growth. If with the plant we have taken also some of the insects infesting it we have brought its natural enemies with it into its new surroundings. Now, with the enemies of plants as with the plants themselves, there exists under normal conditions a balanced ratio between the plant-feeders and those that feed upon them. That is to say, insects that feed upon plants also have their natural enemies, and are kept in check by them. As a rule, in transplanting varieties it is easy to transplant with them the insects that infest them, and especially such as winter on the plants themselves, like many scale insects, various species of plant lice, borers and the like; but the enemies of these insects are very rarely carried with the plants, because, perhaps as a rule, they winter in a different location, and it is during the dormant period that plants are usually transported. We have, therefore, a series of circumstances that makes it easy to import with a plant from foreign countries those enemies that infest it, and make it difficult to obtain at the same time those enemies that keep the plant-feeding insect in check. Plant-feeding insects, as a rule, have the power of adapting themselves to a very considerable variety of local surroundings, and very frequently the new surroundings may be even more favorable to increase than those from which they have been brought. It is rare that an insect is confined for its food to one variety of plant only, and it is not often that it is confined even to a single species; usually it will feed upon an entire natural order.

That is, an insect that feeds upon pear, will feed upon all varieties of pear, and will usually feed also upon apple, often upon quince, and yet more frequently upon all the fruits of the natural order to which these trees belong. Nurserymen are constantly on the lookout for new varieties, as I have already stated; they learn, by means of the catalogues issued, of some variety in some country which has special properties, and think that that would be a good variety for them to obtain and to propagate; or a new variety is discovered in their own locality that they get hold of and which has certain advantages. They get the variety, or perhaps an entirely different species, planted and propagated. If they have brought with it insects infesting it, those insects will, in almost every instance, multiply and spread, not only upon the plants upon which they were introduced, but also upon those that are allied. We have, therefore, in nurseries a very important factor in the introduction of new insects into our State, and one that must be reckoned with in any reasonable attempt to exclude destructive species from our boundaries.

Now, then, let us go further and assume that, on even a single plant imported from another State, or from a foreign country, we have a plant disease, or an insect in some stage, not theretofore known in that part of the country. In a nursery the utilization of ground is a matter of the very greatest importance. Trees and plants are placed as close together as it is possible to do. They almost touch each other in the rows and their shoots and branches intermingle. We have here those conditions that are almost ideal, so far as promoting the distribution and spread of insects is concerned. Let us take, for instance, scale insects; they are active only for a few days in their life, and they are able only to crawl and not able to fly. In the nursery, where branches intermingle, they travel without difficulty from one young tree to another, and they infest in a short time an entire row. Thus from a single plant an entire row may become infested, and as the rows are close together transportation from one to the other is easy. Furthermore, often a few plants only are obtained, or a variety, or perhaps a single tree may have some special qualities which it is desired to propagate. Buds or cuttings from this tree are grafted upon other stocks and with them the disease infesting the original tree, or the insects on it are transplanted to the new stock. With scale insects this is an especially easy thing to do. A few of the small species will be often found on the buds themselves, or very

close to the buds, or on the young shoots. Now if these young shoots are cut off, the insects are cut with them and transferred to the new stock. If this budded or grafted stock is sent out, new localities are being constantly infested. It has been proved that it is possible to bud peach yellows and leaf curl, and I have seen any number of instances where scaly shoots and buds have been used and placed upon otherwise sound and uninfested stocks.

It is also the practice with some fruits, as for instance pears, to import stock from other countries, and bud our native varieties upon them; the foreign stocks being supposed or actually having some advantage over our American stocks. But with these stocks we often bring insects belonging to the foreign country, and which may prove exceedingly destructive in our own State. In other words, we have in the nurseries, not only with us but elsewhere, a breeding and propagating bed for insects and for plant diseases, as well as for plants themselves. I know of numerous cases where plant diseases have been brought into orchards, farms and gardens previously free from such diseases, on nursery stock, and have seen instances where nursery plants and those immediately surrounding them were infested by disease, while all else was free, and where no disease had previously existed. With insects we have precisely the same condition of affairs. Let me just mention a few of the cases that have come under observation within the past year or two in our own State.

First, and most important, perhaps, is the San José scale. How this insect was imported into the United States is perhaps a question. We do not know at the present time just where it came from, nor when it reached our shores. It was at first supposed we had received it from South America with plants imported from that point, but further investigation proves that the contrary is true, and that South America received it from the United States on plants sent to that country from California. It is, at all events, certain that, in importing "curculio-proof" plums from California, we imported with the plums possessing this desirable characteristic the San José scale, which is decidedly worse than the curculio. The scales were not noticed by the nurserymen, or if they did see them they accepted them as something belonging to the stock, without any knowledge of what the insects were and with no thought of the possible danger arising from the propagation of the insects, but the insects did propagate. New stock was infested; this stock was sent out to all parts of the State,

and to other States as well, and the result is that we have now the San José scale distributed in about one hundred orchards throughout the entire southern portion of New Jersey, and perhaps some central and northern localities are also infested.

Further, the pear midge is quite a recent introduction into our State, and that was imported with pear stocks into Connecticut not so many years ago. It has spread from that point naturally, but the original introduction into this country is due to the importation of foreign stocks.

The pear psylla has made its appearance in our State in very decidedly large numbers during the past year or two, and in almost every instance I have been able to trace the source of infection directly to nursery stock received from New York State nurseries.

During the season of 1894 my attention was called to a borer infesting pear trees in some of the eastern counties of the State. On a thorough investigation of the matter it was found that we had to do with another European insect that was imported by a nursery about ten years ago in pear stocks, which were used to graft American varieties upon. Here we have on a single fruit alone—the pear—not less than four species of insects, which form the most dangerous enemies to pear culture at the present time, and all of them due to the nursery, either for their original introduction or for their distribution within the State. These are new introductions; but very frequently native insects are distributed much more rapidly than they would otherwise be through nurseries. Scale insects, as a rule, travel slowly, and an orchard started in a new locality with clean trees should remain uninfested, even if no care be given to it, for a considerable number of years, and even at the rate of propagation which we find among scale insects, a dozen or fifteen years of comparative freedom might be expected; but it is rarely that trees are clean when they are received from the nursery. I have mentioned how it is that insects spread more rapidly and more evenly in nurseries, and with the stock sent out the insects are sent out at the same time, so as the orchard grows up we have all the orchard pests present in more or less large numbers. All this leads up to the one point: we cannot do without nurseries; but we can and must manage so that nurseries do not serve to distribute insects and plant diseases, as well as the plants themselves. Now this seems to be a difficult

matter, and it is not easy. It is too much, perhaps, to expect at the present time that every nurseryman should employ a specialist in insects or plant diseases to see that his stock is kept clean and free; but it is a question whether it would not be right to require from every nurseryman a guarantee that plants are free from diseases or from insects, and if that were required, whether the nurseries would not find it to their advantage to take more effective and radical measures to supply good stock. I am perfectly aware that cheapness is looked to by many farmers very much more than quality of stock, and I know also that guaranteed plants would necessarily cost more than those taken haphazard with whatever may infest them; but would it not be better in the long run for a farmer to pay, perhaps, double price for trees and plants, and feel certain that he has trees that are free from fungous diseases and from insect enemies, which will produce an orchard that will give him returns that will last? It seems to me that it is exceedingly poor policy to save in the price of trees and to lose in the results. An orchard is not planted for a year, but it should prove, if properly maintained, a source of income for a long time. Just as surely, however, as poor plants, or plants infested by insects or fungi, are set out, just so surely the orchard will be short lived and the profit from it correspondingly reduced.

Another point to which it is well to call attention: Whatever the reputation of the nursery, whatever the care taken in the nursery, no farmer should set upon his land a tree that he has not thoroughly examined and cleaned before putting out. That seems so simple and so obvious a recommendation that I would be almost ashamed to make it did I not know from practical observation that it was the thing of all others that is most generally neglected. It is rarely that a farmer takes the trouble to examine a tree received from the nursery to see whether it is free from insects. Scale insects upon a tree can always be seen, and there is no excuse for setting out a scaly tree. Return it to the nurseryman and demand a new tree, or clean it by brushing off all the scales mechanically before it is put out. Farmers in this way can do a very great deal to check the spread of insects. It is one of the functions of the Experiment Station to give advice and information. When trees are received that do not look right send a branch or twig that seems "off" in some way to the Experiment Station and find out positively whether there is anything here which

should be further investigated or any reason why the stock should be rejected.

It has been suggested that some sort of supervision over nurseries should be exercised by experiment stations, and that examinations of nursery stock could be made and certified by some of their officers. In some directions this would be possible, but—and the but is a large one—as the stations are at present organized and supported, their force is scarcely sufficient for the necessary work of actual investigation.

I will now show you pictures of some of the pests that have been mentioned and some others that have attracted special attention during the year.

Mr. Jessup—Can you make kerosene emulsion from cold water ?

Prof. Smith—It can be done, but it is hard work.

Mr. Jessup—What is the especial value of the pump you have shown ?

Prof. Smith—It makes an economical mixture of the water and kerosene.

Mr. Rider—Can those insects you speak of as hatching on the cat briars be seen with the naked eye ?

Prof. Smith—Oh, yes ; they are about three-eighths of an inch long.

Mr. McPherson—Have you a living specimen of that insect ?

Prof. Smith—No, sir.

Mr. McPherson—I suspect this insect has been in the country for a much longer time than you think. If I could see one I think I could identify it as a scale that appeared here about twenty-five years ago.

Prof. Smith—I know the scale you refer to very well, but it is not the same.

Mr. McPherson—I am not standing here as a defender of the nurserymen, but I think they have done a great deal of good for us, and it is just a little hard on them to couple their names with the injurious insects. The government has done much to introduce injurious insects, and so have private parties, and they should have their share of the blame.

Mr. Conrow—The government has also done much to exterminate them.

Mr. McPherson—But they have not done enough.

Mr. Blish—I wish to ask about the black ants that seem to feed upon these scale bugs; as I understand it, the ant feeds on the scale insects, but does not destroy them.

Prof. Smith—That is probably so, as a great many of the scale insects exude a sweetish liquid which the ants are fond of.

Mr. Blish—Can you tell us what to do to destroy them?

Prof. Smith—I would have to see the particular specimens you refer to before I could answer that intelligently. Come in and see us and show us the specimens.

Prof. B. D. Halsted, State Botanist, was introduced and delivered the following address on

THE CROSSING OF PLANTS.

Outline of Lantern Lecture.

As crop-growers, the members of the State Board of Agriculture of New Jersey need not be told at the outset that flowers are designed to secure the production of seed in the plants which bear them. Two years ago it was the speaker's privilege to present a series of lantern pictures to show the function of flowers. This evening the same subject is to be carried a step further, and with the aid of the stereopticon, a general outline of the subject of crossing as found in plants will be attempted.

The first slide lets us into the nature of the process of fecundation. This is of the sort known as self-fecundation, for the pollen and the germ cells belong to the same flower. The stamens discharge their pollen directly upon the stigma, and the tubes penetrate to and fertilize the female cells, which afterwards develop into seeds.

In the next picture is shown some of the various kinds of pollen grains. Some are simple and spinose, as in pumpkin; others beautifully marked, as in passion flower, and in the pine they are compound.

The next slide shows the floral parts of the pine, and the pollen is given off from certain clusters of blooms, while elsewhere upon the tree are the female flowers, which after fertilization develop into the ordinary cones. Bear in mind that the flowers are not showy. The pollen is produced in great abundance, and is carried by the winds. The sexes are not in the same flower, and therefore close fertilization is prohibited.

In the next picture we have a water plant (*Potamogeton*), that at blooming-time sends up flower clusters to the air, and one stalk bears staminate blossoms, while another has, so far as the sexual organs are concerned, only pistils. Here, again, the pollen is abundant and dusty, and borne by the breezes to the pistils.

Turning, now, from the flowers without showy parts, let us consider the other of the two classes, namely, those that are more or less conspicuous and fragrant, and, as a result, are visited by insects. The flower of the mountain laurel, for example, will serve our purpose. Formerly it was considered a good illustration of a self-fertilized blossom. The presence of both sexual organs and their position and behavior all seemed to indicate that a flower was sufficient unto itself. Insects visit these flowers, attracted by the showy parts, and are rewarded by the nectar they obtain. The plant finds its gain for its outlay in more and better offspring—a point to be shown more fully later on.

The *Andromeda* has drooping blossoms with showy corollas, like inverted globes to lamps and gas jets. The pollen when liberated falls downward, but is not caught by the stigma of the flower, where dislocated by a needle artificially. If insects search in these pendant blooms for the nectar secreted at the base, they get the pollen upon their bodies, and afterwards bring it in contact with other *Andromeda* flowers.

Many kinds of flowers have different stages in their development. Thus in the horse balm the two stamens mature first and stand in the way of the bees, while later, when they are withered, the pistil is in a position to be touched and receive the pollen.

In the flower cluster of the English arum—an own cousin to our "Jack-in-the-pulpit"—the staminate flowers are placed over those with pistils, as if the pollen was to drop upon and fertilize them; but they wither before the stamens mature. Insects bring pollen from another plant to the pistils which bear honey-glands, and are retained in the cup by the drooping fringe of hairs until the stamens are matured, when the hairs disappear and the insects escape.

Instead of letting the insects and wind transport all the pollen, man has learned to do it, and crossing is thereby carried on along definite lines. The picture shows the stages in the process of crossing: as pursued with carnations, it being essentially the same with all plants. If the flowers are hermaphroditic the stamens need to be re-

removed before their pollen is mature. To assist in this the corolla, so far as necessary, may be taken away also, as it is no longer of use to attract insects. A sac of paper or cloth is placed over the castrated blossoms until the pistil becomes ready to be fertilized. Plump stamens are taken from the variety of plant to be used as the male, and kept until the pollen is shed, when it is applied to the pistil with a camel's-hair brush or otherwise, and the sac again restored to its place for a few days.

A small kit of tools is convenient for this work of crossing, with a record-book, sacs, labels, forceps, scissors, brushes and a bottle of alcohol into which to dip the instruments, to kill any adhering pollen.

The corn plant is one which crosses with ease, and offers good illustrations of the process. Upon the top of the stem are borne the staminate flowers, and the dry pollen in great abundance is distributed by the winds. The pistillate blooms are lateral, and collectively form the ear.

Black Mexican, a standard variety of sweet corn, is crossed with White dent. Ear No. 1 is the type of the variety used as male parent, while No. 2 is the type of the female sort. At No. 3 is shown the immediate result of the cross, corn from which was planted to produce No. 4 and No. 5, the former (No. 4) being from the wrinkled or sweet kernels of No. 3, while Nos. 5, 5, 5, were from the dent kernels. It is seen that there are two types of ear and kernel shown, the one in Nos. 4, 4, and the other in Nos. 5, 5, 5.

Ear No. 1, in the next picture, is the type of the Leaming Yellow Dent, 18-24-rowed, used as the male, while Ear No. 2 is the Triumph Sweet 3-rowed and female sort in the cross. No. 3 shows the immediate result and Nos. 4, 4, 4 are ears grown for planting No. 3.

Second year from Leaming and Mammoth Sweet, 12-16-rowed, is shown in the next picture. Nos. 1 and 2 are from Yellow Dent kernels. Nos. 3 and 4 from White Dent kernels, and Nos. 5 and 6 are from sweet kernels. Nos. 1, 3 and 6 show general shape of Leaming. Nos. 2, 4 and 5 show shape of Mammoth Sweet corn.

Ear No. 1 of this series is the type of Queen's Golden pop-corn taken as male parent, and No. 2 is Common Pearl, the female parent. No. 3 is the corn grown from the cross of the above, and it illustrates the great increase of the ears over either parent. The immediate result if not shown.

The last four slides upon corn are from Bulletin 21 of the Illinois Experiment Station, by Prof. G. W. McClure.

The influence of the cross is not confined to the ear or any other particular portion of the plant. This is shown by the figures on the screen. Petunia plants, self-fertilized for five generations, gave a total in inches of 697.88, while inter-crossed plants were nearly twice as tall (1190.50), and plants self-fertilized for four generations and crossed with fresh stock gave 1051.25 inches. The advantage of the out-cross is pronounced. This is not an exceptional case from Darwin's large work upon "Cross and Self-fertilization of Plants."

The egg-plant is quite easily crossed, and this group in the picture interests us as giving the types of fruits of six well-established sorts of egg-plant with which Professors Bailey and Munson have been at work. The seventh is the result of a cross between Giant Round Purple and White Chinese. It was selected from the light type of the year previous, and gave no suggestion of the purple color of the Giant. This is most prolific, but its color condemns it and illustrates how much established taste and the demands of the market must be considered in breeding plants.

From the cornfield and the market-garden we now pass to the orchard. Mr. Waite, of the U. S. Department of Agriculture, has published a bulletin (No. 5, Division of Vegetable Pathology) upon "The Pollination of Pear Flowers" from the plates of which the next six views have been taken. He shows that the Bartlett pear in its contour markings, and even in texture and flavor of the flesh, is influenced by the pollen. The picture is of self-pollinated Bartletts. With the one on the right the sac was not removed until the pear was formed, the other was hand-pollinated.

The next picture shows outlines of self and cross-pollinated Bartletts. The contour of the former is not common, and it would seem that the description of the typical Bartlett needs yet to be written.

The next picture is of Buffums. Nos. 548, 549, 550 and 551 are pollinated with Bartletts, the two unnumbered are from the tree at large. Nos. 331 and 334 are self-pollinated and have a different shape (slim and tapering) from the others, and not so good in flavor.

There is a striking difference in the seeding in the fruits above considered. Thus the self-pollinated Bartletts rarely yielded seeds, as shown in the upper row in the picture, while the second row is with Clapp's Favorite, next with Easter and the last White Doyenne.

With the Buffums the two lower rows are self-pollinated, and the three above with numbers are with Bartlett. The others are from the trees at large.

Mr. Waite finds that many varieties of pears are more or less self-sterile, while others are self-fertile, and with the latter crossing is often an advantage; in short, the best specimens of fruit, as a rule, are crosses. Therefore, plant mixed orchards, and if one has a large orchard of a single sort, and it is not fruitful, introduce some other variety in place of old trees or as grafts, and have an abundance of bees in the orchard at blooming-time.

That the amount of pollen has an effect upon not only the number of seeds but the size of the fruit is shown by Professor Munson, of the Maine Experiment Station, in his tomato experiments of two tomato blossoms adjoining in the same cluster. One received an abundance of pollen and the other but little. The former made a large fruit and the latter a small one.

There are cases, however, on record where fruits have grown to considerable size in the absence of pollen. Of these, the English forcing cucumber is familiar to many. Egg-plant fruits have matured without pollen, but of course were seedless.

Let us pass now to crosses between species, that is, hybrids. The Lorillard is a well-known tomato of the common type of *Lycopersi. cum esculentum*, while the currant tomato is from a distinct species, *L. pimpinillifolium*. The species differ as much in foliage as fruit; the hybrid resulting is intermediate in all qualities. Much of the productiveness of the currant is retained, while the size is much increased. Further work is being done by Professor Munson in crossing the hybrid with the Lorillard to increase in size of fruit, at the same time decreasing the *pimpinillifolium* blood in the derivative hybrid.

Mr. Burbank, of California, is a surprisingly successful hybridizer, and from his publication, "New Creations," some illustrations have been selected for the screen. His "primus" is a hybrid between two species, the Western dewberry (*Rubus Ursinus*) and Siberian raspberry (*Rubus crataegifolius*), and the fruit combines the qualities of both the blackberry and the raspberry.

A more striking result is shown in the next picture, namely, a hybrid between a raspberry and a strawberry, that is, between plants in different genera. "Out of seven or eight hundred of these

curious hybrids, not one has ever produced a berry, though blooming with greatest profusion. The plants, when young, are practically strawberry plants, but with age, produce canes five or six feet high. The leaves are trifoliolate invariably, the canes thornless or nearly so."

Returning to the blackberry-raspberry hybrids, the next picture shows the wonderful variability in the stems, which are of plants all raised from seed from the same individual hybrid. The onward, even flow of the streams of life has been much stirred, as shown in the diverse outward appearances. The differences in foliage were equally great. Such plants are in a plastic condition.

The picture here given, Mr. Burbank has made to show the variability in the fruit forms of the Japan quince, and the possibilities that are lying there for the development of useful plants for the orchard.

Mr. Burbank effected a cross between two species of walnuts, getting a hybrid that yields larger nuts than either of the plants.

Nos. 1, 2 and 3, in the next view, show the skeleton leaves of three plants: 1, of *Philesia*, a climber; 3, of *Lapageria*, a shrub, and 2, of the hybrid of 1 and 3 *Philageria*. The blending of the features of the two is complete. Nos. 4, 5 and 6 show the upper surface of the leaf of each of the above. The lower surface of the same set is shown in Nos. 7, 8 and 9. The organs of vegetation are more like the male, *Philesia*, while the reproductive parts more nearly resemble the mother, *Lapageria*.

Figures 1, 2 and 3, in the next picture, show sections of portions of stem of the three plants seen in the previous view, namely, *Philesia*, *Philageria* and *Lapageria*. In Fig. 1, the bundles of fibers are small and numerous, bark thin; while in Fig. 3 the bark is thick and the bundles few and large. The hybrid *Philageria* averages the two parent plants.

Graft hybrids are not unknown; that is, the production in the graft of characteristics not met with in stock or the scion. Hybrids often lean towards one parent. The amount of sex element in pollen and female cell will vary, but most largely in the pollen. Some hybrids are infertile because the reproductive cells are feeble. Others have mechanical obstacles to fertilization.

It has been the endeavor to show that crossing is the ordinary thing in nature; that it plays a more important part in crop-growing than is generally supposed. Crossing in the variety is the rule, and

nature abhors continuous self-fertilization. It is not rare between varieties, is occasionally met with among species, but rarely between genera. The boundary lines between which crossing takes place are quite well established, giving us the stability of species, it being the exception that hybrids arise, save when the plants are subject to unnatural conditions. The one extreme is self-fertilization, against which are all floral displays in blossoms that bear both sexes. The other extreme is too closely related genera between which hybrids are rare and not often valuable or long enduring.

Some crop plants, as the corn, cross readily under man's control, and in the orchard varieties are often self-sterile and require other sorts near to them. Some sorts of strawberries are without pollen, and many kinds of pears require cross-fertilization. Species-hybrids teach a lesson of the thoroughness with which the parents have their structural peculiarities blended. The laws which govern the production of hybrids are not well understood. The pistil or mother plant seems most apt to furnish the characteristics of the reproductive organs, while the stamens the vegetative parts. But the subject needs further study. The crossing of plants is commended to all, but it is only one of the factors in the problem of producing improved sorts. The same care in all details that obtain in stock-breeding hold in the breeding of plants.

Mr. Van Deman—The experiments of Mr. Waite are perhaps some of the most important in their results to scientific horticulture of any made in a long time. I want to say this, that I have no theories or opinions that I am not ready to abandon at any time upon sufficient evidence; I am willing to accept any facts as facts, and any theories worth anything, or any deductions from facts.

Many of us know that it is a mooted question (but strongly contended for by some) that the cross of two varieties or species has what is termed an immediate effect upon the fruit. Thus, two strawberries, the Bubach and the Levick—if the pollen of the Levick be placed upon the flower of the Bubach the fruit will partake of the peculiar qualities of the Levick. I think that is plain. If the pollen of the Easter pear be placed upon the flower of the Bartlett pear the fruit will partake of the characteristics of the Easter pear. Now, I say there are persons who contend that this actually takes place, but I think it is a mistake. I think that Prof. Bailey, of

Cornell; Prof. Crozier, of Massachusetts, and others, have made very careful scientific experiments with the direct intention of determining the truth or falsity of such theories, and both those gentlemen have told me that up to the dates when we had our conversation they had found nothing to confirm such an opinion. It might, perhaps, look to some persons who have not given the matter sufficient careful investigation, that the experiments made by Mr. Waite were leading us to such belief. Let us take the Bartlett pear. The Bartlett pear, self-pollinated, is not a perfect pear; that is, the seeds are not perfect, but when the pollen of another pear, which is potent—when it has exerted its influence upon the Bartlett—the seeds become perfect, and the flesh surrounding the seeds is also swollen to its natural and perfect condition. Then we have the perfect pear.

We might perhaps think the case of the corn controverted such an opinion. This point has been brought up, but the corn is the seed itself, while the pear is the flesh surrounding the seed. There is nothing in the ear of corn to compare with the flesh of the pear. The seed of the pear is affected in color and in form, but not the pear; that is, the peculiarities of the other pear are not transferred to the Bartlett.

There is a case that often comes up with the orange-growers. You all know there are varieties of the orange as well as of the potato, for instance, or anything else. There is an orange called the Washington Navel orange, and there are others with the name "navel" attached, because the blossom end has a peculiar mark resembling a navel. Sometimes this bulges out an inch, or even more, beyond the orange. All such oranges have this peculiar mark. If you make a careful examination of these oranges when in the flower, under a microscope, you will not find a single grain of perfect pollen. This variety is absolutely sterile. From some malformation they have no pollen in their own flowers, and, moreover, the pistils seem to be deformed. They never have any seeds to amount to anything, and in an examination of hundreds of these oranges only a few seeds will be found. Now, there are persons who contend that the Washington Navel orange exerts an influence on other oranges in the neighborhood by conveying to them this peculiar mark. They have seen other oranges with this mark, and jump right across this space and declare that a barren or infertile orange like the Washington Navel

orange had transferred its peculiarities to them. They will stand on the floors of our societies and declare this to be a fact.

We should not jump at conclusions; it requires a most careful investigation to know exactly the real facts in the case.

Mr. Benham has been mentioned, and I want to say that I have been on his place, and have examined into his experiments. He is the most illustrious experimenter I know of in crossing fruits and flowers. In fact he is the most illustrious in the world. I do not think all the other experimenters in this line, put together, will equal Mr. Benham to-day. He says he has only begun his work, and he is but a young man—the originator of the Benham potato. He has made myriads of experiments, and he has brush piles as big as this room, and out of his many experiments he gets perhaps only half a dozen good things.

This subject is worthy of our serious and thoughtful consideration, and any man who wants to work successfully had better look carefully to the things scientists are developing.

The Chair—I feel that we have been highly entertained by the Professors, and am glad we were able to have them with us.

A vote of thanks was tendered the speakers for their entertaining addresses.

Then adjourned until 9:30 A. M. Tuesday.

SECOND DAY,

MORNING SESSION.

William R. Lippincott in the chair.

Mr. Taylor—Some of us who live in the vicinity of small towns and boroughs sell our own produce. Of late there has been a tendency to require us to take out a license for the privilege of doing this, although the way the law has been, if we understand it rightly, this is all wrong, and we have a perfect right to sell our own produce without such license. We think there should be some definite enactment setting this matter beyond a doubt, and the farmers should see that the law in relation to this is kept as it should be.

Mr. Rogers—Several years ago I had occasion to look this up in Newark, where there was an attempt made to compel every farmer to

pay a license fee for selling his products. The City Councils looked it up, and some of the best authorities were consulted, and it was found that it was clearly illegal. More than that, the Supreme Court has decided again and again, and the Court of Errors and Appeals has also decided, that such licensing of farmers is clearly unconstitutional. They even went so far at one time as to try and circumnavigate the law by imposing a tax on wagons going over the roads, but the Supreme Court called that a road tax, and decided that such a road tax was unconstitutional. The trouble is that no one takes the trouble to find out the law in such cases. The state of affairs is exactly this, that in all license laws in the State of New Jersey the farmer who sells his own produce is exempted. In Newark the right of the farmers to stand on the public streets came up, but it has been decided that they can stand at one place not exceeding five minutes, and the only way the storekeepers can prevent the wagons from standing in front of their places is by getting an injunction. This is one of the few rights preserved to farmers, and you should assert your rights and don't be afraid.

Mr. Meech—I would like to say a word in relation to economy in legislation. I might put it in the form of a resolution, that it is the sense of this Board that all legislation be in the direction of economy. This is what we all wish. If this idea were followed up by the Legislature, I think we might have some relief from the present heavy burden of taxation. In the county where I live—and there are others just as bad, I am sorry to say—it is with difficulty that we can pay our taxes to-day, where we are dependent on our crops, as most of us are. Our Tax Collector says he has never seen it so bad as it is this year. Formerly we had two great States, Pennsylvania and New York, where the Governors received a salary of \$10,000 a year, but a few years ago New Jersey, like the toad-fish that swelled up and did not burst—more's the pity—New Jersey swelled up and gave her Governor \$10,000 salary. These are the only three States whose Governors receive this amount of salary. Now, I hope this Board will give out the expression that we want that salary reduced. [Applause.]

I see this "Bill No. 1," as it is called, introduced to do away with Lay Judges and make the Judges elective, may become a law, and it is a step in the right direction, but the salaries are made \$7,500 in counties of the first class and from \$4,000 to \$5,000 in counties of

the second class. The Judges of the Supreme Court of the Union get only \$8,000 a year, and it occurs to me that this legislation is not as economical as it should be for this little State of ours. I think such salaries are exorbitant. Let us have economical legislation and some relief from the burden of taxation, which is growing so heavy. I am glad to see that it is proposed to lop off those useless appendages, the Lay Judges; but this is not enough, and I think we should express ourselves in no uncertain terms, and then perhaps it may come to the ears of our legislators, and cause them to remember how they came together. They have not been sent there as partisans, and they should understand this. [Applause.]

I understand there has been, or is to be, a bill introduced doing away with the present Freeholder system. We should do away with this cumbersome and expensive system, and have the duties of the Freeholders performed by three commissioners, and pay them a stipulated salary, the same as is being done in other States. This is no experiment, for more than half the States do this work with three men. There is a bill now before the Legislature, I think, to have this work done by commissioners, and pay them \$1,200 a year salary for each man. Now that is a large salary for this work. In Massachusetts they have three men, and the highest salary paid there is \$2,500 a year for the three, or about \$800 a year apiece. This high salary is only paid in the large city of Boston, and other counties pay much less, and I think it has been said by competent men on this floor that these men would be well paid at \$750 apiece. Now, gentlemen, if they continue to swell the salaries any higher—I don't know, but I think we will have to take to the woods. [Laughter.] I wish a vote could be taken on this matter now, without any reference, and perhaps it might go before our Legislature and convince them that we really mean what we say, and look to them for some redress in the matter of taxation. We want it all along the line, too, and don't want our lawmakers to think, he is my friend, and I may be Governor next year, and I don't want to touch him. [Applause.] Don't bring the salaries quite down to the price of wheat, but where it is equivalent to a fair and square payment for a fair and square day's work.

Mr. Fitzga—In regard to taxation, is it not our duty to look first at our home Assessors? We have complained in relation to our high assessments, for these are entirely too high. Our Assessors come

around and base their assessments on the fact that such and such a farm was bought a few years ago for \$100 an acre, and yet to-day it is not worth more than \$40 an acre, and they tax that farm at \$60 an acre. When we say to the Assessor that his valuation is too high he tells us that it cost \$100 an acre and it is only assessed at \$60, and therefore is not too high. What can we do? Nothing. I do not think any Assessor should have the right to assess property for any more than it is worth to-day.

On motion of Mr. Jessup, the report of the Committee on Nomination of Officers was heard, as follows. Mr. Nicholson, on behalf of the committee, reported the following nominations for the ensuing year :

President—D. D. Denise.

Vice President—Prof. E. B. Voorhees.

Secretary—Franklin Dye.

Treasurer—W. R. Ward.

Executive Committee—Wm. R. Lippincott, Theo. F. D. Baker, B. R. Clifford, with the President, Vice President, Secretary and Treasurer.

On motion of Mr. Lewis, the report of the committee was received and concurred in.

The Chair—I therefore declare the gentlemen just named the officers of this State Board for the ensuing year, and we will be glad to hear from them in their own behalf. [Applause.]

Mr. Burrough—I would like to be permitted to add my indorsement to the nominations made. I think my associations with these gentlemen have been such that I know whereof I speak when I say the men you have chosen for your officers, and for your members of the Executive Committee, are such as will redound to the credit of this Board. [Applause.] I know their devotedness to the cause, and none will serve you more faithfully, willingly and effectually than they. I trust a committee may be appointed to conduct the new President to the chair.

The Chair named Messrs. Edward Burrough and George Jessup to conduct the new President to the chair, whereupon—

Mr. Burrough—In asking you, Mr. Denise, to accept this chair, I feel I am qualified to pledge to you the earnest support of the members of this Board. [Applause.] In pledging this, I am giving you no more than they have given to me during the time I have acted as Chairman, and I know you will receive the same encouragement.

Mr. Denise—I thank you for your encouraging words. As I am not feeling very well, I will ask Mr. Lippincott to continue in the chair. I am very sorry I am not in condition to talk to you, as I have a very sore throat. I very much appreciate the honor you have conferred upon me, the more so as it was entirely unsought by me, and should I consult my own feelings in the matter, I should feel like declining to accept the position. It is sometimes necessary, however, to lay aside our own personal feelings, and bow to the wish of others. [Applause.] I well know the duties of the office of President of the State Board of Agriculture, for I have been associated with your retiring President, and know how faithfully and energetically he worked to make the State Board a success. I know how to appreciate his services, and think I am safe in saying there is no other State Board in the Union that stands higher than this. [Applause.] Our reports are asked for all over the Union, as well as by foreign countries, and our Board is held in high esteem. In accepting this position I can only pledge myself to continue the good work to the best of my ability, and I ask you, gentlemen, to give me the same support you gave him, and this Board will go forward and broaden out its lines of work and usefulness, and be of benefit to all of us, I hope. I thank you again for the honor conferred. [Applause.]

Mr. Dye—I can only say that my past work must be the pledge of the future, and that I will do all I can, not only in this State Board meeting, but in the County Boards, to make our work a success. [Applause.]

Mr. Nicholson, on behalf of the Committee on Officers' Reports, then reported as follows :

The Committee on Officers Reports have examined the ex-Chairman's address and find much therein to recommend it to the attention of the farmers of this State, and would particularly claim for it the perusal by the younger members who are agriculturists, as the hints contained in it tend to make life interesting and useful.

That part relating to trespass we would refer to the Committee on Legislation ; the matter referred to is a growing and intolerable nuisance.

The trolley introduction on the public highways has received so much attention from the County Boards of Agriculture it is presumed all are conversant with it.

The familiarity with the insects and their lives, habits and depredations should, as recommended, claim the attention of all County Boards of Agriculture, and exhibits of them made at their meetings.

The collection of statistics of agricultural products of this State would be of immense value, and more fully illustrate its capabilities and bring them prominently before the public.

If blanks were prepared and furnished to the Assessors of each township, and they were to fill them at the time of their assessment, it could be done without being a serious burden to the State.

The *résumé* of the history of this Society is interesting, pointing as it does to the necessity of those conducting an organization of this kind being directly interested in it, and cognizant of the wants of those they represent.

Your committee also coincide in the recommendations made by the Committee on County Board Reports, and would recommend the request for competent clerical assistance be granted.

The duties imposed upon the Secretary are very onerous, more particularly since he has assumed the responsibility of conducting the County Institutes, which we consider one of the most important undertaken by this State Board of Agriculture.

Your committee would further remark the interest and efficiency of the officers of this Board have made it second to none for intelligence and usefulness in the United States.

Signed on behalf of committee,

I. W. NICHOLSON,
GEORGE W. F. GAUNT.

The report was received and adopted.

Mr. Budd then reported the awards of the State Premium Committee. (See report following that of the State Agricultural Society.)

The report of the committee was adopted and ordered to be published, and the committee was discharged with the thanks of the Board.

The Chair—I take great pleasure in introducing to the Board Mr. H. B. Gurler, of De Kalb, Illinois, who will address you on the dairy question—

COMPARATIVE PROFIT TO THE FARMER FROM MAKING AND
SELLING BUTTER, OR SELLING MILK.

BY H. B. GUBLER.

Mr. Chairman and Gentlemen—The subject assigned to me is that given on your order of business, but your Secretary has very kindly given me leave to wander pretty much as I please in this butter and milk field, there being no one else to talk on this subject on your programme.

With his consent I will talk on this subject as applied to the farm, rather than as applied to dairying in its literal sense. I think I can keep myself better in line in this way, and perhaps you can follow me better.

What I shall say will be partly from notes and partly from my recent work on dairying, in which are expressed my views up to date, practically; I hope you will excuse me, therefore, for reading from this work.

First, then, gentlemen, is the selection of your herd; in this lies the foundation of the whole dairy business. Success depends more upon the herd than on any other one point. Much, of course, depends on feed and care, but the best of feed and care will not make a cow with a capacity of only 125 pounds of butter annually a profitable cow.

When we think that the average of the 16,500,000 cows in the United States is only 130 pounds of butter annually, according to the last census, is it not time to be thinking how to improve the work? There is no doubt but that there is room to improve, as there are herds in the United States which average 400 pounds and above per cow, annually, and herds in nearly every community in the dairy sections that average 300 pounds of butter per cow annually.

These 300 to 400-pound dairies should be object lessons to all dairymen. What one dairyman or dairywoman has done another can do, and probably a little better can be done. It is certainly well for us to try to excel in whatever line we are working. I shall not advise all dairymen to sell their present herds and buy registered cows of some of the dairy breeds. That is all right for those who can see their way clear to do so, but I believe it is wise to breed registered animals when a person is so situated that he can do so.

What every dairyman can do is to test individual cows and dispose of such as do not come up to a profitable standard. This standard will vary in different localities, depending on the cost of feed and labor and on the value of the products.

We should not take any other person's figures or estimates for this, but should know from our own work what it costs to feed a cow one year. To the cost of the feed add the cost of labor, and the interest on the money invested in the animal. We will suppose it costs \$35 to feed the cow a year, and \$12.50 for labor to care for her, and \$2.50 for interest on the cost of the cow; we now have \$50 charged up against the cow. Now, what shall we find to put on the other side of the account? It is very plain to be seen that the 130-pound cow is not in this race, as her butter will have to sell at thirty-three cents per pound to leave a profit.

Now, I want to touch here on the question of skim milk; I believe the skim milk valuable for certain purposes, and we will allow \$10 per cow for her skim milk annually, leaving \$40 balance to be paid for by the butter before we have any profit. We will suppose as much butter is made in winter as in summer, in which case the average price, after paying for making at the creamery, will be about twenty-one cents per pound. Now, it will require 190 pounds of butter at twenty-one cents per pound to balance the \$40 and leave us whole. In this case the cow that makes 190 pounds of butter per annum does not make us any profit. In my experience I find no profit in a 200-pound cow. I might have 100 of them on my farm and not make \$250 per year on the whole herd.

Now, what is the sense in keeping such cows? We would not keep a horse that could only do work enough to pay for feed, neither would we keep a man who could only do work enough to pay for his board. But most of us keep a dairy of cows, one-fourth of which actually run us into debt. There is no excuse for this at the present period of the dairy work. Before the introduction of the Babcock test there was some excuse for a dairyman not knowing what each individual cow was doing for him, though even then there was not sufficient excuse for this condition, as the cows could be tested by the churn. This required a great amount of work, but it paid.

On this question of testing I wish to say a few words right here. There are many ways of making the test, but my plan has been this: So far as frequency of applying the test is concerned, if you wish to

Know exactly what a particular cow is doing the milk must all be weighed and a sample taken from each milking and tested. The composite test can be used for this work, and more of this hereafter. A reasonably-reliable test can be had by testing one day in each month—a more reliable one by testing twice per month. For the past year's work I have adopted the plan of making three tests, with four months' time between each test, each test to cover three days' time, a record of each milking to be kept, and a sample of each milking to be put into a bottle that is to be marked with the name or number of the cow the milk is from. For taking the samples have your tinsmith make you a little cup one inch in diameter and two and one-half inches deep. This will hold about one ounce, and is sufficient. When first milked weigh and record the milk, then pour it from one pail to another, back and forth, two or three times, then take the little ounce cup full and put it into the sample bottle or jar. A pint fruit jar can be used for this purpose, or an eight-ounce bottle may also be used, having a small funnel to fill with. I want to emphasize this point in relation to the mixing of the milk. It is generally supposed that the milk is sufficiently mixed in the act of milking, but this is not the fact. It should be poured back and forth at least three times in order to mix it thoroughly, and then take your sample, which will be fairly sure of being correct.

If this test is being made in warm weather care should be taken to preserve the samples sweet for the three days. I use a piece of bichromate of potash in each sample jar or bottle—a piece the size of a French pea being about right. This will prevent souring and will keep the cream in a liquid condition, so it will mix with the milk readily, with slight agitation. At the end of the three days the samples should be carefully tested.

Mr. Wood—Will not the bichromate discolor the milk?

Mr. Gurler—It is true it will discolor, but as we have less than a half-pint it is a matter of minor importance.

After getting our composite sample and making this test, we know the quantity of butter fats the milk contains, and to this I would add fifteen per cent., as this is about a fair increase to allow for that portion of the butter which is not composed of butter fats. In some cases more could be added, but this is a pretty fair average. In this I allude, of course, to separator work, as it is a little too high for gravity work.

Mr. Reed—Is that your rule invariably?

Mr. Gurler—I cannot intelligently make any other rule, and I find it is a fair one. You cannot, of course, fit it to gravity work, but it works well with separator work, and if you do not obtain these results with separator work you should see what is wrong and remove the cause. In gravity work there is from a half-pound to a pound and a half of butter left in every 100 pounds of milk, while the separator, if working properly, leaves but a small percentage of butter. This seems like an enormous loss, but I know it to be a fact. I have made so many tests, there is no doubt about it in my mind. Take a sample to the creamery and have it tested, and this will convince you. For this reason creameries can afford to pay more than you would otherwise get out of your milk, and still have room for a profit. Of course I do not mean to say the dairyman cannot do better, for it is possible for the creameries to do even better than most are doing. But we take it as it is, not as it should be.

As I have stated, I make three tests in the season, four months apart, and from these results so obtained I figure out what my cows are doing, and I find that my cows averaged for 8.4 months the same as they did for the first six months. In other words, if a cow averaged thirty pounds per month for the first six months, she would make 8.4 times as much butter for the year's work and drop her calf the same time as the previous year. She could give enough milk after the 8.4 months to make the 2.4 months average the same as the preceding six months. I have proved this in my dairy, but this does not prove that it would be a reliable rule in every case, but I mention it as an inducement to those dairymen who hesitate to undertake this work of testing, on account of the labor entailed. They fear they cannot manage it, and so go on in the old way, and milk cows that are running them into debt, and are not rising up to meet the emergency.

Mr. Dye—You desire that tests be made to know if each individual cow is paying a profit or is only a boarder?

Mr. Gurler—Yes, sir. Go right through your herds and find out what you have got. At the Illinois Experiment Station we decided we would put in a dairy of ten cows, and we wanted no cow unless she was capable of producing 300 pounds of butter. We had already a little dairy there, and found that some of them were going even above that mark. We had one Shorthorn in the herd, and, to the

surprise of myself and every one else, she was making her two pounds of butter every day. At the end of six months she had made 374 pounds of butter. Others we had no use for at all. There is where so many dairymen make a mistake. Why not bring your dairying down to a business basis, the same as the merchant or manufacturer conducts his business—for a profit? How many manufacturers or merchants could make a success of their business if carried on in the same way so many dairymen are doing? If I make a mistake in the assumption that some of you do thus carry on your dairying in New Jersey, I know you will excuse me. I was raised in New England and moved out West to grow up, and therefore have a little clearer idea of the Eastern States than if I had been born in the West.

Mr. Dye—It might be well to allow the members of the Board to ask questions on points of interest as you proceed, if you have no objections.

Mr. Gurler—If you think it best, I have no objections; any way that will do the most good. What I wish to bring out is the comparative value of cows making 250 pounds of butter per annum and those making more. The 250-pound cow leaves 50 pounds for profit, and a 300-pound cow leaves 100 pounds for profit, or twice as much as the 250-pound cow, and is worth twice as much. The 350-pound cow is worth three times as much as the 250-pound cow and six times as much as the 225-pound cow. This is supposing that one cow consumes as much food as the other. This may or may not be the case, but whether it is or not, it does not in any case make an argument of sufficient weight to be considered when comparing 250-pound cows with 350 to 400-pound cows. The question of the ability of the cow to produce the most from the food consumed is an important one, and should be followed as soon as we can reach it.

I want to say, in this connection, that I do not live on my farm, but I look after it carefully. I charge up to each cow the feed given her, the cost of labor in caring for her, and the interest of the money invested in her first cost, and in this way I arrive at the cost of her keeping and the revenue derived from her, and can tell whether she is paying me or not. The cost of labor per cow I put at \$12.50 per head, for this is what, in my experience, it has cost me.

Mr. Dye—The labor costs you \$12.50 per cow annually?

Mr. Gurler—Yes, sir ; \$12.50, annually, per head. I have found this from careful estimates.

Mr. Betts—That is the actual cost of her care without any other labor in connection with the dairy ?

Mr. Gurler—I estimate the cost of her feed in addition to the cost of her care to be \$35 per annum ; that is, the actual value of the feed she consumes.

Mr. Betts—Do you count this the actual cost of the feed ?

Mr. Gurler—Where I buy feed I take it at cost, and for silage I count the cost of raising and storing, with a slight margin over and above the cost. I take the silage at \$2 to \$2.50 per ton, as this is above what it costs.

Mr. Reed—What is the average number in the herd ?

Mr. Gurler—About 70 cows.

Mr. Betts—How many men do you have to care for them ?

Mr. Gurler—I have four men all the time, but I have five milkers. I have a skimming station on my farm, where my milk and that of some of the neighbors is skimmed. The man in charge of this station also helps with the milking, and this gives me one more milker besides the regular farm hands. There is considerable work on the farm besides milking, such as growing fodder, and some allowance must be made for that work. Of course if the farm is run entirely for the cows it would only be fair to charge up the entire cost of the labor to the dairy, but as there is much other work it is only fair that credit should be given in this way.

Now, as to the question of feed. We are in the corn-belt of Illinois, but I expect you can grow corn as cheaply here as we can, unless it is a question of land values, and I do not know what your lands are worth. The interest on your investment must be counted, of course, and in making your comparisons these things must all be taken into account.

Mr. Betts—These men who take care of the stock—do they give their whole time to it and to the farm ?

Mr. Gurler—Only one of the men devotes his whole time to the herd, and he attends entirely to the cows and calves and pigs, and does not go into the field at all. This is one of my best men, and the one who won the first prize for milking a year ago. He gets \$1 per month more than any other man on the farm except the foreman.

Now, in making a comparison of the values of the 250-pound cows

as compared with the 300 to 400-pound cows, I have not taken into account the value of the animals for beef, but am merely considering them from the value of the income. Here let me touch on the question of buying cows; shall we buy or raise our cows?

As time passes and the Babcock test comes into more general use, it will become more and more difficult to buy cows that will make a profit, as the farmers becoming acquainted with their cows will not sell their best animals. This is as it should be, and we should be prepared to meet this gradual change that is sure to come. What breed to select for dairy purposes I shall not undertake to tell you, only let it be some one of the special dairy-purpose breeds. Study this subject thoroughly and select the breed you think best suited to your wants. I have grade Jerseys that are excellent cows, also grade Holstein-Friesians, grade Shorthorns and registered Jerseys.

Prof. W. H. Caldwell, of New Hampshire, who was superintendent of the Guernsey cows in the great breed contest at the Columbian Exposition, in writing on this subject, uses the following language:

“This law of natural selection applies with equal force to the dairy cow. The progressive dairyman wants a dairy cow whose lines of temperament and functions are for milk or butter, as may be desired. It does not necessitate fancy-bred stock. Don't, however, believe I wish to raise one word against pedigreed stock. There is place for it, and it should be more generally distributed than it now is, and farmers should be more eager for its influence. My object now is to take the problem confronting the hundreds of dairymen whose conditions have not led to the same. Competition and economy are forcing them to improve their stock. This lesson of individuality should be a most encouraging one to them. They undoubtedly have many a fine, profitable dairy cow in their own herds. What is needed is to have some plan of improvement.”

I think Prof. Caldwell's expressions fully coincide with my own ideas on the matter. He has expressed it much better than I could have done, however.

When buying cows it is best to test them before buying, and avoid unprofitable cows. This can easily be done if the cow is giving milk. With the present low price of beef, a discarded cow will not sell for beef without considerable loss on the price paid for her as a milch cow. Several years ago, when a fat cow would sell to the butchers for from four to five cents a pound, live weight, we could dispose of

them without loss, but now it is quite different, as cow beef is very low priced.

The best way I have learned to dispose of cows that are below standard is to feed heavily and milk at the same time. After three or four months most cows will improve in condition, and may be fattened while being milked, and sold for beef soon after becoming dry. Fattening dry cows is unprofitable work. I have never been able to do it without loss. I advise to fatten while milking, always, and sell as soon as possible after the cow is dry, as a dry cow cannot be fed at a profit with the present low price of cow beef.

This is the case with us, and I presume if you move them down East the difference between the cost of grain consumed and amount received for sale of the beef will be still greater. Bearing directly on this question, I will give you a few figures reported by some of the experiment stations. The Maryland Experiment Station reports a comparison of the cost of fattening cows nine to ten years old, and those five to six years old, feeding corn meal, wheat middlings, linseed meal and Hungarian hay or corn stover. In eight weeks the two older cows gained 105 pounds, at a cost for food of \$20.65, or nearly 20 cents per pound of gain, and the two younger cows gained 209 pounds, at a cost of \$21.95, or about 10½ cents per pound. Some European work in this line has shown it to be very unprofitable.

I will now take up the question of feeding and management. In feeding cows the point which attracts my attention most frequently is the palatability of the food. This point must be looked after with great care, as it is the key to the situation. It matters but little how much nutriment there is in any kind of food, if it is not palatable the cows will not eat enough to make a satisfactory profit.

The cow is a machine for manufacturing our coarse fodder and grain into milk. This machine requires a certain amount to keep it in running order, and our profit comes from what she consumes after she has taken care of herself. A food may be so lacking in palatability that she will only consume enough to sustain herself, in which case our profit is a minus quantity. The question of digestibility enters into the problem, but my experience has caused me to think that palatability and digestibility go together, or at least a palatable food is a digestible food. Palatability we must have, as we cannot succeed without it. How shall we secure it? With our

hay it can be attained by cutting at the proper time, and curing and protecting it in a proper manner. My experience teaches me that the clovers, and especially the medium clover, make the best hay for milch cows, when cut at the proper time, and well cured and secured.

Only a small percentage of farmers commence haying as early as they should, and they think they will not lose much by letting clover wait. As a matter of fact, clover should be cut for hay when in full blossom, and the same rule will apply to other grasses when to be made into hay for cows. If we have a large quantity to cut, we must commence before it reaches its best stage, otherwise some of it will become much too far advanced before we can secure it all. The cow cannot overcome our mistakes. It does not matter what the cause of the delay is, when it gets to the cow she is compelled to accept our excuses for not furnishing a more palatable and nutritious food, and we are compelled to accept her excuse for not producing a profitable quantity of milk. This is an inevitable result. The cow is not to blame, for she has done her best. If she could talk English I believe she would make some of us ashamed of ourselves.

If we would try to learn cow language, it would pay us well for the time spent. Learn to know as soon as we look the cow over, and over her surroundings, what we have failed to do that we should have done for the comfort and health of the cow and profit to the owner. There are many things here that I cannot describe. We must study the situation and the cows; try to reach the condition that we know intuitively when things are right and when they are not right. This will come with experience, and with it will come an increased profit for our work. We cannot cover the loss from poor hay or silage. I have never been able to bridge over the mistakes I have made in not securing good hay or silage for my cows. An increase of the ground feed will help, but it will not cover the mistake in full. At the same time it increases the cost of the feed, as a rule, as in most localities the coarser foods are the more economical, so far as they can be used. We pay dearly when we fail to secure our hay, corn fodder and silage in the best possible condition. We lose something that we can never recover. We can simply learn not to do it again.

I am afraid, gentlemen, I shall not be able to get over my ground, as this subject is practically illimitable, and I don't want to take up too much of your time. The field is so large, I feel that I rattle

around in it like a pea in a quart basin, but I want to touch on the best time for getting your corn for silage.

From my experience, gathered in feeding it for ten or eleven years, I believe the best time for gathering the fodder is between the time of denting—if you have the dent variety—and of glazing.

Then again, in feeding ensilage, the mistake is frequently made of uncovering too much of the silage at one time, and leaving it exposed to the air. When feeding, there should be no more uncovered than absolutely necessary, as the top will then be kept sweet and palatable. If we persist in uncovering too much, I am entirely satisfied the milk will make it known to us.

Mr. Meech—In New York State, where they have used this ensilage most, they like the corn to be glazed before cutting, as they claim it will not spoil so readily; there, too, they sow the largest kinds of corn they can get.

Mr. Gurler—I do not wish to antagonize them in their belief, but what I have stated has come from my own experience in the matter, and I have found that if the corn is allowed to become glazed before cutting there was quite a percentage of corn which goes through the cow undigested, and which is lost, unless you have hogs to follow. It may be you can save all this corn by having hogs to follow your cows, but what is the result of compelling her to handle food she cannot utilize properly? What effect will it have on her? That might do all right for a steer, for his digestive apparatus may stand it all right, but for a cow I should not consider it fair. This has been my experience in cutting silage, and I give it to you for what you may think it worth.

Mr. Fitzga—The best results are found when you cut your corn just before it begins to glaze.

Mr. Gurler—That is right. Silage is cut in all stages, of course, but it is best just when it is beginning to glaze. The fodder is then more mature, and gives better results. It is the best plan to work your fodder into silage, for it saves cutting and shocking, shelling and grinding the corn, and you get the whole nutriment combined in this way.

Secretary Dye—In planting corn for ensilage, has not the practice been to plant too much seed to the acre, thus making the growth spindling and watery?

Mr. Gurler—I am glad you have brought that out. In my early

experience in sowing silage I used 20 to 25 and even 30 quarts of seed to the acre, because I wanted to grow more fodder. I got no corn-food—and we want the grain-feed. Since then my experience has taught me that 9 quarts to the acre is sufficient, and I drag nearly a third of that out.

Now, just a word as to the influence of silage on butter. I understand this is almost a delicate ground to get on to. I know most of the condensed-milk factories throughout the country refuse to accept milk made from silage. There is one factory in Michigan which takes it, I understand, but I think the reason for their refusal is that there is more risk of spoiling the milk than where hay is fed from the mow. This is on account of its exposure, as some dairymen do not watch their silage and care for it intelligently, and I do not know that I can blame the condensed-milk people for refusing milk made from silage. I think I should do the same thing myself for self-protection.

I would like to touch slightly on this question of the effect of silage on the milk. Several years ago I had visit my place a large delegation of milk-shippers, who were shipping milk to Chicago, and who were anxious to look into the question of the effects of ensilage on the milk. They asked for a sample of the milk, and the foreman, not having expected them, or not having known they were coming, brought out a pitcher of the ordinary milk of the morning, without any preparation or selection whatever; the visitors tasted it and smelled of it, but none of them could perceive the slightest effect of the silage, or that there was anything about it to show that it was silage milk. A little more in that line: at the Vermont Dairy School for two years, when I was in charge of it, all our milk was silage milk. All the cows producing milk sent to the Dairy School were fed on silage. Tests were made nearly every morning, and in the many tests made not one trace of silage was found. We found everything else—we found the smell of unclean cloths, dirty dish-pans, and of the hoppers, but we did not find any trace of silage.

Mr. Fitzga—In regard to the taste of ensilage in the milk—the ensilage should never be fed before milking, but always after the milking is all done. Between the two milking-times, twelve hours, the gases from the ensilage have ample time to pass off. Another point is that the greatest cleanliness must be observed in and around the stalls; the mangers must be cleaned out and not thrown into the

stalls, or in front of the cow for bedding. It must be thrown outside of the stable entirely, and it should never be brought in until you are ready to feed it. If you do this you will have no smell and no taste from it. I have shipped ensilage milk to the most fastidious customers, and no objection has ever been raised to it.

Mr. Gurler—That is all very true. The milk will readily absorb the odor of the silage from sitting around after milking. We made a test of this and found it had absorbed the odor very readily.

Now, in relation to warm water for the cows. I think this advisable, and I find the cows prefer the water warmed if you give them their choice. I have heard men argue that warm water is not palatable for stock. This does not agree with my experience. On one occasion some of my young stock got into a water tank to reach the warm water that was running in from a pipe on the opposite side of the tank, where they could not reach it without getting into the tank. I have also watched my cows in the pasture in the summer and fall. I have an eight-inch tile drain discharging into an open ditch forty rods from a stream into which it empties. In warm weather the cows will drink from this open ditch near its outlet into the stream, where the water is warmer than at the mouth of the tile. But as soon as it gets cold in the autumn the cows go to the mouth of the tile, where the water is the warmest. In both cases they appear to prefer the water where it is warmest.

I believe it is more economical to warm the water with coal at \$4 per ton than with hay and grain after she drinks. Hay and grain with us do not get cheap enough to be used for fuel, though I have seen the time when corn was more economical than coal for fuel, but corn is higher and coal lower in price now than at that time.

Again, in relation to watering cows in the stable. I have seen stables fitted with various watering devices, but I do not believe it is advisable to allow the water to stand exposed in the stables in an open vessel, as it will absorb any impurities there may be in the atmosphere. I thought at one time if I ever built any more stables I would put in a watering device, but I built a new stable for fifty-four cows, and I did not put in a watering device for the reason given above. Then, again, I think it a good thing for the cows to have a chance to run out in the open air to get water once a day. However, if you could have some device to run in fresh water to the stables when it is wanted and keep it fresh always, it might be desirable.

Mr. Heritage—Have you ever thought of fitting a cover to the drinking cups, having it fit perfectly tight? Then when the cow wants to drink she can raise the lid and drink.

Mr. Gurler—I have never seen that done.

Mr. Heritage—I have that arrangement in my stables.

Mr. Betts—How many times a day do you water your cows?

Mr. Gurler—I water them once a day, as I think that is all they require.

Mr. Heritage—If you have the same arrangement I have on my cups you will be surprised to hear how often the lids will drop after the cows are done drinking. One of my cows, I noticed, took three sips of water from her cup while eating her feed, and they all drink frequently.

Mr. Gurler—I find if I water my cows twice a day they do not seem to care for it the second time. I am glad, however, to hear these points brought out.

Mr. Fitzga—Don't the desire for water depend on the kind of feed?

Mr. Gurler—No doubt it does.

Mr. Fitzga—I think it is well to water cows often, for they will not drink so much at once. It seems to me they should have water whenever they want it.

Mr. Gurler—The desire for water will vary, of course, with the kind of feed they have, but my experience has been that my cows do not care for water the second time in the day.

I want to say a few words in regard to the subject of milking. Milking is a trade, and comparatively few dairymen realize the importance of it, or the necessity for kindness, neatness, system and regularity, and of securing all the milk.

The cow must be kindly treated at all times and in all places. It will not answer to bring her from the pasture on a run, with the dog behind her; and if she, in her excitement, gets into the wrong stall, don't put her out with a blow from a whip or boot. The owner pays for this immediately in the quantity and quality of the milk from the next milking. Any person who doubts this should use the scale and the Babcock test and satisfy himself. The cows should not fear the person who cares for them. There is a chance for the person to improve so long as this is the case. The feeling between the person who cares for the cows and milks them, and the cows, should be such that when such person goes among them, either in the barn or in the

yard or pasture, the cows will not only not care to move away from the person, but will actually appear to enjoy the company of the one who cares for them. When this is the case there need be no fear so far as kindness is concerned. Among a number of cows purchased at the Illinois Experiment Station there was one which broke us all up. Her percentage would run up and down without any apparent cause, and we could not account for it; and tests were made by experienced people at the Experiment Station. The fat in that cow's milk varied from 1.8 to above 9 per cent. of fats, and we could not seem to find the cause at first. The men in charge traced the matter back and found that this cow had been accustomed to her feed before being milked, so she could eat while she was being milked. She was all broken up by the change, and that is the way she got back at us.

Mr. Dye—What about the question of cleanliness? This is a very important factor.

Mr. Gurler—It is certainly very important, and it might be as well for me to explain here how I have my stables built. I built one last fall, and in connection with the question of cleanliness I will also refer to light and ventilation.

I have a large silo, 28x60 and 24 feet deep. I have built on one side of this additional stable room. In this I have a cement floor back of the cows and under hind feet and clay under the cows. I put in a clay floor because it is better for the cow, and it is more economical. There is also no place for the rats to harbor, as if it was a plank floor all the way, and there is no timber to rot out. I put in what is called the Bidwell stall, and I will try to explain what that is. We give the cow whatever room is thought best with it in setting the partitions. The cows line up to the gutter instead of to the mangers, and the mangers are movable, to suit the length of the cow. She is kept in the stall by means of a rope across in the rear, from one stall partition to another. There is a lattice-work in front of the cow, which is adjustable with the manger to suit the length of the animal, and this is adjusted to keep her back to the gutter. The partitions are jointed, so they can be swung over against the other cow while milking. This method gives plenty of room for the milker, and it is also a protection against the other cow kicking you. The cow is not tied at all in this stall, but is kept to her place by the rope in the rear.

Mr. Betts—How wide are the stalls?

Mr. Gurler—Any width you please to make them. Small animals like young heifers do not require so much room, and if she attempts to turn around in the stall you can fix up a rack alongside of her to keep her in place. I would not make them less than three feet wide, although for very large cows three and one-half feet would not be too much.

Now, in relation to ventilation. I would add that when I contemplated building I thought I would conduct the liquid manure through the gutter into a cistern. I corresponded with Professor King, of the Wisconsin University, and Professor Roberts, of New York, in regard to saving this manure. I had had an idea that the only loss in storing this liquid manure would be by evaporation, but they told me there would be a loss from fermentation also. They also recommended the saving of the liquid by means of absorbents. For this reason I did not put in a cistern, but I save the manure by using absorbents. In my silo I have three compartments, with three flues for feeding. To get in the fresh air we use the wall on the side as a flue; on the outside at the bottom we have an opening, and an opening at the ceiling on the inside, and the air passes up through this and into the stables, and is distributed over the top of the stables, and in that way we don't get a draft on the cows, because the cold air mixes with the warm before it reaches the cows. For the impure air we utilize the central shaft or feed chute of the silo. This is made so we can open it up, the door in front being hinged at the sides so it can fold back out of the way. This opening is about twenty inches or two feet from the floor, and this allows the impure air to escape from the stables. This is carried up and passes off at the top of the building. I find it works very nicely. I was at first in doubt about the effect of allowing the cold air to come in at the top, as I was afraid it would not be properly mixed, and would not do the work properly. Plenty of light and fresh air are of importance as well as cleanliness. Give plenty of bedding, and keep them clean at all times. Use also plenty of absorbents.

Mr. Heritage—How far apart are these flues?

Mr. Gurler—There are two flues in forty-eight feet.

Mr. Heritage—How large are they?

Mr. Gurler—There are about one and a half square feet in each flue area. That is, for fifty-four cows. A square foot for ten cows was

Professor King's recommendation. I do not claim any originality in the idea.

Mr. Betts—What is the height of the ceiling?

Mr. Gurler—Nine feet.

One word on the question of kicking cows; she won't kick unless there is a cause for it. That you can mark down for a fact. If you can find the cause remove it, but if you cannot remedy it, don't keep her; sell her.

Mr. Dye—You would not sell her to another dairyman for a milk cow, would you? [Laughter.]

Mr. Gurler—No; not from policy, if not from principle, for we could never sell the same man another. [Laughter.]

I want to say a word in regard to the difference in milkers. There is a great difference. I have had some milkers who would get enough more milk from 15 cows in one year, than other milkers I had at the same time, to pay their salaries for the year. This may seem like a pretty broad assertion, but it is the fact, and there are many milkers whom the owner of the cows cannot afford to have in his employ at any price.

I test all my cows periodically, and at the same time I test the milkers. This takes no extra time, only in the matter of looking it up, as each milker has his regular cows to milk, and at the end of the season it can be readily calculated how each milker has made his cows hold out with their milk.

The following figures are from my books, having the record of the work done during the winter of 1892 and 1893:

Milker No. 1, December 17th, 1892, cows gave 356 pounds; February 28th, 1893, 258 pounds. Milker No. 2, December 17th, 1892, cows gave 298 pounds; February 28th, 1893, 244 pounds. Milker No. 3, December 17th, 1892, cows gave 304 pounds; February 28th, 1893, 204 pounds.

During this time the cows of No. 1 shrank 98 pounds; No. 2's cows shrank 54 pounds, and No. 3's cows, 100 pounds. The percentage of shrinkage was, in the case of No. 1, 27 per cent.; No. 2, 18 per cent., and No. 3, 32 per cent. The shrinkage per cow from December 17th to February 28th, was, for No. 1, 7 pounds; for No. 2, 5 pounds, and No. 3, $9\frac{1}{2}$ pounds.

The milkers of the future will have their records, and will secure

their employment on them. It will require time for this plan to work its way to the front, but it will surely develop.

After studying over this milking question for two years, trying to devise some plan by which I could interest my men in the work, thereby securing better service, I decided to offer prizes to be competed for. I have five milkers, and I offered three prizes, to be awarded on the percentage of shrinkage for three months. The first prize was \$10, the second, \$5, and the third, \$2.50. My milkers were greatly interested in this work during the whole time of the contest, and the results showed careful work. One milker, who milked 12 cows, had a variation from highest to lowest daily weight of seven pounds during the week. Another milker, who had 14 cows to milk, had as low a variation as seven and one-half pounds in the daily milk of his cows for the week. My total milk, which reached 1,850 pounds daily, varied less than some of the patrons who had but 250 to 300 pounds daily. This was the result of careful and systematic work, and work that pays. The young man who won the first prize had a shrinkage of 1.85 pounds per cow in three months. The winner of the second prize made a shrinkage of two pounds per cow, and the third-prize winner made a shrinkage of 2.6 pounds per cow for the three months.

Mr. Johnson—How should a man proceed to milk properly?

Mr. Gurler—The most important thing is a proper understanding between the milker and the cow. There must be the kind of feeling when the cow is glad to be milked. He must be kind and quiet with his work, and he must milk regularly. He must not skip around here and there, but take the cows in regular rotation, the same as we expect to be fed in rotation when we go to the table. We don't want the waiter to skip us, and the cow don't want the milker to skip her. The cow is sensitive in that way, and it takes but little to throw her out of her regular flow of milk.

A Member—What would be the result if the regular milker was missing at milking-time?

Mr. Gurler—It would be bad.

A Member—I have tried to avoid this. I have always commenced at one end at night and at the other end in the morning, and none of my cows are expecting to be milked at certain times or in certain rotation.

Mr. Gurler—I would strive to avoid a change of milkers, for I

believe it important to have the same milker every time. You will get better results with regular milkers; there is no question about it.

A Member—You would have the same milkers milk the same cows?

Mr. Gurler—Yes, and at regular hours.

Mr. Blish—I had a cow shrink seven quarts by a change of milkers for three days.

Mr. Dye—A change in milkers makes a profit or a loss to the farmer sometimes, as the case may be?

Mr. Gurler—There is no doubt about it. Some of the most faithful men I have had in my employ have not been good milkers. They would do the best they could, but they did not have the gift of milking. The milkers should do their talking before they begin to milk, and then attend strictly to their milking, doing the work as fast as they can practically, being particular not to hurt the cow in any way, and to milk the cows clean. If the cow is not milked clean the richest part of the milk is left, and this kind of milking will cause the cow to shrink her milk. This point must be looked after carefully. Always milk with dry hands. Do not dip your fingers in the milk, nor allow it to be done. A person can milk better with dry hands as soon as he becomes accustomed to doing so. I was taught to milk with wet hands, but broke myself of the bad habit.

A Member—In regard to milking clean; what is considered by the term "clean?" I have gone over the cows after my men, and invariably got from a gill to a half-pint of milk within three to five minutes after they were through milking.

Mr. Gurler—I am not surprised that you should get a gill after five minutes. I would not condemn a man if I found a gill, but if a half-pint were found I would not consider he had milked the cow clean. I would not approve of going over the cows a second time, as it would not be helpful or beneficial to the cow.

Mr. Johnson—Would it be wise to go back a second time to secure what had been left?

Mr. Gurler—I have never practiced it, and doubt the advisability of it. I can bring no facts to back it up either way.

Mr. Clifford—Please give us your information in regard to dehorning.

Mr. Gurler—I skipped that subject, because I thought I would not have time to touch upon it.

In relation to dehorning: I have watched it carefully and picked up all the information I could get, and dehorned some of my cows who were cross and ugly. It was fully five years before I felt fully decided to dehorn my cows, and then I had them all dehorned by a practical man, who had dehorned 5,000 head. I am pleased with the result, and sorry I did not have it done earlier. It changes the disposition of the cow. They find they cannot injure one another, and they flock together like sheep, and are more kindly and gentle. I attribute this to dehorning, but may draw on my imagination, so you must draw your own conclusions.

Mr. Clifford—My experience coincides with yours exactly. It is certainly a success.

Mr. Gurler—In relation to this question of cruelty in dehorning, I am satisfied there is practically none. I have had my cows dehorned, and they have gone right on feeding as before, and the shrinkage at the next milking was very slight. I think it a humane act to dehorn them, as it prevents the unruly cows from hooking the others.

Mr. Clifford—I had always supposed the pith of the horn extended to the head, but this is a mistake. Where the horn comes up close to the head there is no pith or no sensitive part, except the rim of the horn.

Mr. Gurler—If properly done, I think there is but little pain.

Mr. Clifford—It should not be done in warm weather.

Mr. Gurler—October is the best time, when there are no flies.

Mr. Crane—Have you ever tried caustic potash on calves to prevent the horns growing; and do you consider it injurious?

Mr. Gurler—I see no objection to it.

Mr. Crane—Have you noticed any difference since dehorning, as to whether they are gentler?

Mr. Gurler—I think they are more gentle.

Mr. Crane—I went into a neighbor's house recently, when a little boy came in, with his face plastered with cow manure, and with a black eye. He was asked what had done it, and he said the mooly cow had upset him. His mother said that was it—if a mooly cow could not hook she would kick. [Laughter.]

Mr. Gurler—I do not live on my farm and I don't milk now, so I don't get kicked. [Laughter.] I cannot say as to that part of it, but the question has never been raised by my milkers.

Mr. Crane—I believe they are more docile and quiet, and that kicking is the result of improper handling of the cow.

Mr. Gurler—Without doubt.

Mr. Cook—What is the width and depth of the gutter in your stalls?

Mr. Gurler—It is fifteen inches wide and six inches deep. The first I built were four inches deep and sixteen inches wide, but I thought I would prefer them a little deeper, and made the others six inches deep.

Mr. Cook—How wide is the platform?

Mr. Gurler—According to the size of the cow. For two-year-olds you would not want over four feet, or perhaps even less. For large cows weighing, say, fifteen hundred pounds, you may want five feet. You cannot make an arbitrary rule; adjust them to the size of the animal.

Mr. Cook—They are lined up with rope?

Mr. Gurler—Yes, sir.

Mr. Cook—How do they lie down? Do you have any trouble?

Mr. Gurler—I have never had any trouble.

Mr. Cook—How high is the rope?

Mr. Gurler—Above the gambrel joint. I never measured the height. I got a guide for putting up the stalls when they were shipped to me. They came knocked down and we set them up according to the directions.

Mr. Crane—Does the gutter run to the partition?

Mr. Gurler—The rear stud of the partition stands right on the edge of the gutter, and the rope hitches to it. This last stud slants backwards a little, and the rope holds the cow to this gutter-line, and all the droppings go into the gutter.

Mr. Crane—In regard to this caustic potash; I saw a photograph of the skull of a calf where one side had been treated with the potash and the other side not, and the skull was deformed. Do you think the potash detrimental?

Mr. Gurler—I can only answer this by saying that I have treated calves with the potash and did not use enough to produce bad results from it. I can only give you my own experience.

Mr. Crane—I did this last winter, and I was afraid it might affect the brain of the calf, because it got so sore, and I stopped using it. On one heifer the head is perfectly smooth, while on the other there

was not enough used and there are little stumps. It seemed to make them sick, and so I stopped using it.

Mr. Gurler—I have never found any evil results in my experience.

Mr. Gillingham—How many applications would you make?

Mr. Gurler—Only one.

Mr. Abbott—What pains do you take to keep the milk clean while milking? Do you groom the udders?

Mr. Gurler—We always do that. We always brush the udder and the flank, and clean those parts before milking.

Mr. Abbott—Do you use the hand or a brush?

Mr. Gurler—In the summer season we do not use the brush, while in the winter we do. In the summer season they are lying outside, and there is seldom any necessity for cleaning, unless they come in with muddy udders from standing in the mud, and then we use a pail of water to cleanse them.

Mr. Cook—Do you use the Babcock test?

Mr. Gurler—Yes, sir. Always.

Mr. Betts—How many cows in your herd?

Mr. Gurler—I have ninety cows and heifers now.

On motion, a vote of thanks was extended to Mr. Gurler for his valuable and interesting address.

Adjourned to 2:15 P. M.

(Feeding and manurial value of skim milk and other additional matter furnished by Mr. Gurler since the annual meeting.—SECRETARY.)

My experience in feeding skim milk to calves and pigs convinces me that it is worth twenty-five cents per one hundred pounds in Illinois, and I believe it is worth more in New Jersey, as other kinds of feed are more valuable, and the growth made by animals when fed this or any other kind of food is worth more.

Nearly twenty years ago, after considerable work done in an experimental way to establish a basis for my own use, I reached this conclusion among others, *i. e.* that two hundred pounds of skim milk was equal in feeding value to one bushel of corn. In reaching this conclusion I gave the skim milk one-half the advantage that comes from feeding it in combination with grain feed. This I now believe to be unfair, as I think the skim milk should have credit for all the

increased profit that comes from feeding it in combination with grain feed, that there is above the profit of feeding the grain feed alone.

It is certainly fair to give the skim milk credit for all profit that cannot be secured without its use. On the basis just mentioned I have received as much as fifty-six cents per hundred pounds for skim milk fed to pigs weighing forty pounds each. The Wisconsin Experiment Station has done some work in this line that makes a better showing than any I have ever done.

I have raised many calves on separator skim milk and find that when the milk is fed sweet and warm, and not too much fed, that calves thrive well on it. My experience with it for calves convinces me that the calf will not make as much growth from a given amount of skim milk as a pig will. Its value as a food for calves will, of course, depend on the stock it is fed to.

Several years ago ex-Governor Hoard made an experiment in feeding skim milk to pigs. The pigs weighed one hundred pounds each, and cost four and one-half cents per pound. They were fed fifty-six days on clear skim milk, which was weighed to them daily and fed sweet. At the end of fifty-six days they were sold, and the growth, figured at four and one-half cents per pound, paid twenty-two and one-half cents per hundred pounds of skim milk fed. As Governor Hoard says, this work was not done under the best conditions, nor in the most economical way, as it would without doubt have paid better to feed some kind of grain food with the skim milk.

Mr. C. P. Goodrich, of Fort Atkinson, Wis., kindly gave me the results of some experimenting he did in feeding pigs. A herd of six-months-old pigs, weighing one hundred and twenty-five pounds each, were divided into three lots as nearly equal as practicable. Lot 1 was fed entirely on skim milk and made five pounds growth from one hundred pounds of skim milk. Lot 2 was fed entirely on corn and made ten pounds growth from one bushel of seventy pounds ear corn. Lot 3 was fed on skim milk and corn in proportion of one bushel of corn to one hundred pounds of skim milk. This combination produced eighteen pounds of growth. This illustrates very nicely the economy of feeding a combination ration.

When the bushel of corn and the one hundred pounds of skim milk were fed separately they made fifteen pounds of growth; when combined they made eighteen pounds of growth. Here is 20 per cent. better results obtained from the combination of foods. And this

is not all the meat in this nut by any means, as the farmer can feed three times as many pigs when he feeds one bushel of corn to one hundred pounds of skim milk as he can when he feeds clear skim milk, as the bushel of corn has in this case twice the feeding value of one hundred pounds of skim milk. I think it is fair to conclude from this work that there is twice the profit where the skim milk is fed with the proper amount of grain food than there is where it is fed alone. This is in line with my own experience, and also with much experiment station work. Mr. Goodrich is a farmer, and did this work for his own information.

The Massachusetts Experiment Station, after a number of years' experiments (one object of which was to learn the value of skim milk as a pig-food), commenced some work to learn the value of skim milk as a food for young calves. In this work there were seven calves, each kept, weighed and fed independent of the others, so that there were seven trials going on at the same time. A summary of results shows that when live weight sells for $4\frac{1}{2}$ cents per pound the average of the seven calves returned three-fourths of a cent per quart for the skim milk fed. This would be the same as 35 cents per one hundred pounds. These calves were fed ten weeks and gained an average of one and one-half pounds per day.

The Experiment Station report of 1891 says: "There is a belief quite prevalent among certain classes that the separator has some mysterious influence on the skim milk to make it of different quality from the skim milk of ordinary setting. This difference is considered to extend not merely to the fat, but to influence the other ingredients. To ascertain the truth of the matter, three samples of milk were tested before and after being run through the separator." After concluding the work with the samples, the station says: "It is evident from these figures that the milk serum is not influenced by the separator, and that the only difference between the whole milk and the skim milk derived from it is in the amount of fat they contain."

New Hampshire Experiment Station Bulletin No. 11 gives much valuable information about the value of skim milk as a food for pigs. I advise every pig-grower in New Jersey to secure it of Professor Whitcher, of Durham, N. H. One very valuable point Professor Whitcher brings out in his work is that one hundred pounds of digestible matter in a ration of skim milk and corn meal is equal to one hundred and forty-six and nine-tenths pounds of digestible matter in

a ration of corn meal and middlings. He says the superiority of the skim milk ration is due in part, doubtless, to its greater digestibility, but still more to the fact that there is less indigestible matter to be carried through the system. This work showed the cost of a pound of gain on skim milk and corn meal to be 3.6 cents, and on a mixed grain ration to be 5.2 cents. This New Hampshire work is certainly safe for New Jersey dairymen to use.

The Indiana Experiment Station found skim milk worth thirty-two cents per one hundred pounds when fed to calves, and allowing five cents per pound for the growth of the calves. The Mississippi Experiment Station found ten pounds of skim milk to make nearly as large gains as eight pounds of new milk.

FERTILIZING OR MANURIAL VALUE OF SKIM MILK.

Dr. Armsby, in the 1887 report of the Pennsylvania Experiment Station, on page 50, gives the manurial value of cows' milk at \$2.09 per ton. On page 51 of the same report is a table showing the manurial value of \$10 worth of various farm products, in which cattle are put at \$1.18, milk 88 cents, and butter at 1 cent. When we manufacture our feed into milk and the milk into butter, or have it made into butter and retain all except the butter on the farm, we sell but 1 cent's worth of fertilizing matter in \$10 worth of product; we are, in fact, not robbing the farm of anything (\$1 in \$1,000 worth of butter).

In the 1891 report of Vermont Experiment Station, page 118, Professors Cooke and Hills say: "In a dairy of twenty cows, giving 4,000 pounds of milk each yearly, the total fertilizing value of the milk for a year will approximate \$86.80—all of which is *lost to the farm* if the whole milk be sold; two-thirds (\$56.80), if cheese is sold and the whey retained; one-sixth (\$13.20), if the butter is sold and the buttermilk left at the factory; one-hundredth (86 cents) only, if butter is sold and both skim milk and buttermilk fed upon the farm." Here is a loss of fertility to the farm of \$4 per cow when the milk is shipped from the farm, and 4 cents per cow when nothing but the butter is taken from the farm. Putting this with the feeding-value of the skim milk and the loss from wear and loss of cans in shipping, and we have

MINUTES OF ANNUAL MEETING.

LOSSES IN SHIPPING.

In skim milk, 5,000 pounds per cow, at 25 cents per 100 pounds..	\$12 50
In fertility, per cow	4 00
Extra loss on cans.....	50
Total	\$17 00

to be taken into consideration when comparing the creamery with milk-shipping.

THE COW-TEST STIMULATES.

There is more to stimulate a man that is patronizing a creamery where the milk is paid for on its fat-value, or one who is making up his milk at home in a skillful way, than there is one who is selling the entire milk from his farm. I am confident that two men of equal ability and fitness for the work may start in this line; one shall sell his milk entire from the farm; the other shall retain all on the farm except the butter, feeding the skim milk and buttermilk to calves and pigs; apply the test to individual cows, weeding out those that do not pay a profit; grading-up with a male from some of the dairy breeds, selecting him with care, and not letting a few dollars prevent his securing the best one, and in less than ten years, and probably less than five years, the man that allows nothing but the butter to be taken from the farm will have the most profitable dairy.

My firm, Gurler Bros., have been several years in competition with the milk-shipping business, where milk was shipped to the Chicago market, and we have much less fear of competition than we formerly had. At one of our creameries we have twice met this competition, and overcame it with straight business methods on the plan of four cents per pound for making butter. At this creamery there is now no milk shipped, and has not been for nearly two years.

At one creamery we compete with milk-shipping by purchasing the milk of the patrons, making contracts for a term of months for milk that will test four per cent. fat, and proportionately more or less for milk that tests above or below the standard four per cent. fat. At this creamery, the season now opening, we shall get all the best milk and the makers of milk with a low per cent. of fat will ship. How long the milk dealers can stand this I will not predict, but they are now getting their eyes open. One of Chicago's live milk

dealers was in our office recently discussing this question, and said he was confident the time was not far distant when they would be compelled to buy milk on its fat value, as the majority of creamery men are now doing.

There is no more business sense in paying a uniform price for milk than there is for any other farm product. At the creamery where we purchase milk on its fat value we sell cream in the Chicago market. Cream for city trade will in the near future, where it is not at present, be made in the country, as the time is near at hand when the consumers will not purchase the milk for family use, from which they have purchased the cream for their use. If this does not apply to New Jersey I am glad of it, but it does apply to a great many places.

Cream for city use can best be produced in the country at the creameries. The cream can be delivered in the city in better condition, and save the cost of transportation of the milk from which the cream is made or taken.

After looking this matter all over as well as I can from Illinois, from the Pennsylvania Dairy School, and from what I could learn at Trenton in January last, I feel like saying at this date, February 25th, 1895, that if the dairymen are willing to allow for the feeding value of skim milk, for the fertilizing value of it, and for the extra wear and tear on shipping cans, an up-to-date creamery man can compete with the milk-shipping and make a fair profit on his business.

Pasteurizing of cream for city trade I believe is to develop into a large business. The Pennsylvania Dairy School taught this process at their school in January and February, 1895. Wisconsin is also teaching it. This process kills the disease germs if there are any; it removes all suspicion of animal odors or the cowy taste, and causes it to keep sweet much longer than when not pasteurized. Milk and cream from tuberculous cows can be made entirely harmless to the human family by this process.

SECOND DAY.

AFTERNOON SESSION.

Mr. Wm. R. Lippincott in the chair.

The Chair—We have with us Prof. W. I. Chamberlain, of Hudson, Ohio, member of the Ohio State University, who will talk to you on the “Present Revolution in American Agriculture, and its Prospective Future.”

Prof. Chamberlain—Mr. Chairman, and gentlemen of the convention, I always prefer to be introduced as “Farmer” Chamberlain ; I am simply a Trustee of the Ohio State College, and editor of the “Ohio Farmer,” at Cleveland. I merely say this to take away the ill effects of the introduction, and to set you aright. [Applause].

THE PRESENT REVOLUTION IN AMERICAN AGRICULTURE AND ITS PROSPECTIVE FUTURE.

Gentlemen of the New Jersey State Board of Agriculture—This subject was assigned me by your Secretary. He wrote me as follows, condensed : “In view of the many changes in the agriculture of our country, which have affected the products therefrom adversely, and which have caused the financial ruin of very many farmers, while thousands of others are still struggling with heavy debt and low prices for their work and crops, it has occurred to me that an address taking up the *causes* which have led to the present state of things, and, if possible, gathering up the hopeful factors, giving therefrom encouragement for the future, might be very profitable at this time.”

The depression is unquestioned. Farm values have shrunk in ten years, ending 1889, including interest on mortgage debts, on the average, 38.8 per cent. in eleven States, Rhode Island Ohio, New York, Massachusetts, New Hampshire, New Jersey, Connecticut, Colorado, Vermont, Nevada and Arizona, and have probably shrunk about as much more since that date. See Table I. below, based upon the United States census taken in 1889.

TABLE I.

SHRINKAGE OF FARM VALUES.

STATES AND TERRITORIES.	Average value.	Mortgage per acre.	Rate of interest.	Total interest, 1880-90	Average shrinkage.	Total interest and shrinkage per acre.	Percentage interest and shrinkage.
Rhode Island.....	\$50 27	\$21 61	5.82	\$12 47	\$3 65	\$16 13	22.08
Ohio.....	45 96	15 62	6.68	10 43	1 00	11 43	24.87
New York.....	49 41	21 74	5.66	12 30	33	12 63	25.56
Massachusetts.....	43 52	18 27	5.58	10 19	99	11 18	25.69
New Hampshire.....	20 37	7 74	5.91	4 57	1 25	5 82	25.87
New Jersey.....	65 15	32 57	5.69	18 53	5 33	23 86	36.67
Connecticut.....	49 34	20 22	5.57	11 26	7 19	18 85	37.37
Colorado.....	21 54	6 89	9.23	6 36	2 84	9 20	42.71
Vermont.....	22 39	9 40	5.88	5 52	4 10	9 62	42.90
Nevada.....	10 18	3 35	9.83	3 23	2 76	5 99	58.84
Arizona.....	8 31	3 40	12.61	4 28	2 74	7 02	84.47
Averages.....	\$35 14	\$14 62	7.11	\$9 01	\$2 93	\$11 97	38.80

From my own extensive inquiries and acquaintance with the facts in the Middle States, especially in Ohio, I am convinced that the actual selling price of farm lands, unaffected by proximity to cities, has shrunk, from 1873 to 1895, fully one-half. Farm *values* have shrunk because farm *products* have shrunk. From the files of the "Ohio Farmer," with which I am connected, I learn that cash wheat in legal money in Cleveland, Ohio, the first week in September, when farmers are selling freely, ranged as follows, by decades beginning in 1852.

Years.....	1852-62	1862-72	1872-82	1882-92	1892-94	Jan., 1895.
Average price,	\$1.17	\$1.68	\$1.22	\$0.92	\$0.61	\$0.55

Thus, the average price the last four years is 55 per cent. less than the average price for the thirty years from 1852 to 1882, and the present price is 59 per cent. less than for the thirty years, 1852 to 1882; that is, 55 cents now against \$1.36 average then.

Again, from the United States Government reports, we find the average export price in *coin* for each decade to be as follows, beginning with 1820:

MINUTES OF ANNUAL MEETING.

Years	1820-30	1830-40	1840-50	1850-60	1860-70.
Average price.....	\$0.95	\$1.18	\$1.05	\$1.27	\$1.39
Years	1870-75	1875-80	1880-90	1890-94	Jan., 1895.
Average price.....	\$1.36	\$1.19	\$1.01	\$0.85	\$0.60

Thus we see that the price in 1895 is nearly 50 per cent. below the average *coin* price of the sixty years 1820 to 1880. The full tabular statement by years is given here, with notes interjected.

TABLE II.

EXPORT (COIN) PRICES OF WHEAT, 1820-1895.

Year.	Price.	Year.	Price.	Year.	Price.	Year.	Price.	Year.*	Price *	Year.	Price.	Year.	Price.	Year.	Price.
1820,	\$0 75	1830,	\$1 02	1840,	\$0 95	1850,	\$1 06	1860,	\$0 98	1870,	\$1 29	1880,	\$1 24	1890,	\$0 88
1821,	81	1831,	1 30	1841,	95	1851,	1 00	1861,	1 23	1871,	1 32	1881,	1 11	1891,	93
1822,	70	1832,	1 06	1842,	1 12	1852,	95	1862,	1 14	1872,	1 47	1882,	1 18	1892,	1 02
1823,	1 82	1833,	92	1843,	85	1853,	1 12	1863,	1 29	1873,	† 31	1883,	1 13	1893,	† 80
1824,	1 02	1834,	1 07	1844,	90	1854,	1 55	1864,	1 33	1874,	1 43	1884,	1 07	1894,	67
1825,	1 03	1835,	1 08	1845,	86	1855,	1 66	1865,	1 94						
1826,	88	1836,	1 00	1846,	1 04	1856,	1 85	1866,	1 41	5 yr. av. 1	36 5	yr. av. 1	15 5	yr. av. 85	
1827,	67	1837,	1 57	1847,	1 37	1857,	1 53	1867,	1 27						
1828,	76	1838,	1 29	1848,	1 31	1858,	1 02	1868,	1 90	1875,	† 12	1885,	86		
1829,	1 29	1839,	1 50	1849,	1 14	1859,	95	1869,	1 41	1876,	1 24	1886,	87		
										1877,	1 17	1887,	89		
										1878,	† 34	1888,	85		
										1879,	† 07	1889,	90		
Av.,	\$0 95	Av.,	\$1 18	Av.,	\$1 15	Av.,	\$1 27	Av.,	\$1 39	5yr av	\$1 19	5yr av	\$0 87	Jan. '95	60

* War period.

† Silver demonetized in the United States, but the fact little known. (1873.)

‡ Resumption decreed to take effect January 1st, 1879. (1875.)

§ The Matthews resolution and the Bland Silver law in the United States, and silver dishonored in Austria and India.

¶ Resumption a fact and demonetization of silver widely known, supposed to be partly offset by the Bland law of 1878. (1879.)

‡ Repeal of Sherman Silver law. (1893.)

The prices of fine wool in July, by decades, in Eastern markets have been as follows, as given in Mauger & Avery's annual wool circular, based upon official quotations :

Years	1852-62	1862-72	1872-82	1882-92	1892-94	Year 1894.
Average prices, 50 cts.	62½ cts.	53½ cts.	34½ cts.	22½ cts.	16 cts.	

This shows a final shrinkage, July, 1894, to less than one-third the average price from 1852 to 1882.

Similar shrinkages might be shown from the statistics of other staple crops, varied somewhat by local, temporary or special causes, but on the average of all showing a fall of about 50 per cent. since 1873.

Nor is this ruinous fall in prices confined to the United States alone.

Sauerbeck, the great European statistician, has made an exhaustive comparison and average of the prices of forty-five principal articles of consumption for the eighteen years before and the eighteen years since 1873, down to 1892. He finds that commodities were remarkably steady in average price for the eighteen years before 1873, except for individual, local and temporary fluctuations, and that prices, on the whole, *advanced slightly* in that period, but that since 1873 there has been a constant, steady and heavy decline in these forty-five commodities, and in silver, *as measured by gold*, as shown in Table III., below :

TABLE III.

SAUERBECK'S "INDEX NUMBERS" (IN PART).

Year.	Gold Price of Silver.	Gold Price of Leading Commodities.
1873.....	\$0 97	\$1 02
1874.....	96	1 02
1875.....	93	96
1876.....	87	95
1877.....	90	94
1878.....	86	87
1879.....	84	83
1880.....	86	88
1881.....	85	85
1882.....	85	84
1883.....	83	82
1884.....	83	76
1885.....	80	72
1886.....	75	69
1887.....	73	68
1888.....	70	70
1889.....	70	72
1890.....	78	72
1891.....	74	72
1892.....	68	68
1893.....	60	62
1894.....	51	55
1895.....	47	53

The last three years are given since Sauerbeck's tables were published, but are approximately correct for the lowest point reached each year. Thus, the world's forty-five chief articles of consumption have shrunk nearly one-half and silver has shrunk fully one-half in gold price since 1873, as compared with the average *coin* price (joint gold and silver) for twenty years or more before 1873. It will also

be noted that prices of commodities have kept very close to price of silver—have not fallen if priced by silver.

Your Secretary has asked me to seek and name the real causes and the probable remedies for this ruinous fall in prices. If I do so at all, it must be with absolute honesty. Let us first fix firmly in mind four clear historic and economic facts :

1. This disastrous fall began in 1873, the very date when silver was demonetized by the world's chief commercial nations.

2. It kept steadily on, but took its most rapid downward plunge in 1893, when Austria-Hungary demonetized silver and borrowed \$150,000,000 of gold to establish the single gold basis ; when British India closed her mints to silver and the United States repealed the Sherman silver law, thus virtually closing our mints, also, to silver, and making silver wholly a commodity and not a pricing metal.

3. This fall in prices has not been confined to the United States, though first obscured and then intensified here by tariff changes and by inflation and resumption, but it has been world-wide.

4. It has not been confined to agriculture, though it has touched that industry longest and most disastrously, but has, especially for the last five years, crippled mining, manufactures and commerce also.

With these four facts fixed firmly in our minds, let us examine some of the causes often assigned for our fearful fall in prices and depression in business.

1. *Our United States tariff laws?* No; for the decline in prices is world-wide, not confined to the United States ; indeed, was somewhat retarded here until tariffs were reduced.

2. *Improved machinery?* No; for more of the great world-uplifting, labor-economizing machinery was made before 1873 than since that date. The steam-engine, the locomotive, the steamboat, the cotton-gin, the spinning-jenny, power-loom, nail-cutting machinery, the cast-iron plow, the horse-rake, and even the cylinder power threshing machine, were all in use before 1840, most of them long before that date. The Hussey grain reaper came in 1847, and the wheat drill and improved steel plows and cultivators about the same time. The mower came in 1851, and the sewing machine, knitting machine and corn planter were all in general use the same decade. The self-

dropping reaper came in 1859, and the self-raking reaper in 1860, while even the self-binding reaper came in 1876-7, and even this last invention did not, contrary to general belief, materially increase the United States wheat area, as is seen, among other things, from Table IV. Note 1 calls special attention to this point.

TABLE IV.

WHEAT AREAS, CROPS, EXPORTS, SURPLUSES, PRICES, ETC.

YEAR.	World's crop—bushels (millions).	U. S. CROP.		United States export—bushels (millions), to June 30th of the next year.	United States surplus—bushels (millions), to June 30th of the next year.	Ohio crops — bushels (millions).	Export price, per bushel, average for the year in gold (to June 30th of the next year).	Cleveland price, per bushel, September 1st (currency).
		Acres (millions).	Bushels (millions).					
1881 .....	.....	.....	383	.....	.....	38	\$1 18	\$1 37
1882	* 2,270	+36	504	149	†355	42	1 13	1 06
1883	* 2,084	+36	421	112	†301	27	1 07	1 12
1884	* 2,302	+36	513	133	†380	36	86	83
1885	2,108	34	357	95	263	24	87	88
1886	2,130	37	457	154	303	38	89	82
1887	2,305	37	456	120	337	28	85	75
1888	2,229	37	416	89	327	26	90	93
1889	2,132	38	491	109	381	32	83	80
1890	2,270	36	399	106	293	32	92	1 00
1891	2,364	40	612	226	386	45	1 02	1 03
1892	2,392	‡ 49	516	192	‡324	40	80	78
1893	† 2,465	‡ 35	396	166	‡ 270	48	67	61
1894	† 2,472	‡ 33	435	**160	‡ 275**	50	**60	52
1895 .....	.....	.....	.....	.....	.....	.....	.....	.....

* Three years' average, 2,213. † Three years' average, 36. ‡ Average three years, 345. § Three years' average, 35%. ¶ Average three years, 290. †† Two years' average, 2,443. ** Estimated: year ends June 30th, 1895.

NOTE 1.—From column 3 in the above table it will be seen that the average area (35½ million acres) for the years 1892, '93 and '94 was less than that for 1882, '83 and '84, though the use of twine binders in the latter period was far more general than in the former.

NOTE 2.—From column 2 in the above table we see that the world's wheat average for 1892, '93 and '94 (2,443 million) was 230 million more than the average for 1882, '83 and '84 (2,213 million). But the increase in the world's wheat-eating population in the ten years is estimated at more than 60 million, and this increase at 4½ bushels of wheat per capita per year would require an increase of 270 million bushels of wheat to make the same amount of wheat per capita as in 1882, '83 and '84.

NOTE 3.—From column 6 in the above table we see that the average United States surplus above export for the three years 1882, '83 and '84 (345 million) is 55 million greater than the average surplus for the three years 1892, '93 and '94, while columns 8 and 9 show that prices were far lower in the latter period, as stated below.

To return to the general question: Not one of all these world-moving inventions seems to have cheapened commodities, or at least not agricultural products materially; but rather to have raised wages and general prices, especially from 1850 to 1873, to have increased consumption and enlarged and elevated human living and general comfort.

3. *Over-production?* This is incessantly and persistently urged by gold monometalists especially, as the cause of the present amazingly-low price of wheat, but neither the world nor the United States has had a greater per capita production of wheat in 1892, 1893 and 1894 than in 1882, 1883 and 1884, and really less per capita for mankind, when we consider ten years' increase in the world's wheat-eating population and the vast quantities of wheat fed to live stock in the United States for the past three years. (See Table IV., note 2.) But the average export price of the crops of 1892, 1893 and 1894 has been less than 70 cents, as compared with the \$1.02 average for the crops of 1882, 1883 and 1884, while the present New York export price is only a trifle more than one-half of the gold export price for the sixty years from 1820 to 1880; that is, the present export price is only 60 cents, against \$1.18 then. Especially is the statement false and ridiculous that our present low price in the United States, averaging at the farms less than 50 cents, the lowest in the world's modern history—that this disastrous price is due to our "enormous surplus above export demand in the United States," for our average surplus above export for the three crops of 1882, 1883 and 1884 was 19 per cent., or 55,000,000 bushels *greater* than for the three crops of 1892, 1893 and 1894, while the present export price is 60 cents, against \$1.18 in 1882. (See Table IV., note 3.)

The export for the crop of 1894 is estimated and approximated, the export year for that crop not closing until June 30th, 1895.

This shows the utter folly of the claims that "over-production" and "vast surplus above export" are the cause of present low wheat prices in the United States; nor is the world's crop greater per capita than in 1882, 1883 and 1884, as already shown. (Table IV., note 2.)

4. *Under-consumption?* Ah, but what caused the under-consumption except this era and atmosphere of low prices, the very thing we are trying to account for? Let us not "argue in a circle," nor mistake effect for cause. It was this long, bitter, disastrous decline in prices *itself* which demoralized agriculture, mining, manufactures

and commerce, reduced wages, threw countless workers out of work and kept them from buying comforts or even necessities, except most sparingly. The question is, What caused this decline and consequent under-consumption?

5. Another cause often assigned for the depression is *the ignorance, negligence and extravagance* of farmers. But this would tend to prevent over-production, and thus keep up prices; and, further, these faults are not greater since than before 1873, the point where the fatal decline began. Farmers never worked more intelligently, diligently, desperately, to hold up their falling fortunes.

6. Is the decline due to *adulteration, grain-gambling, excessive or unjust freights, unfair taxation, unwise patent laws*? Yes; all these causes have hurt farming, but not more since 1873 than before that date; indeed, not so much in most cases, because of better legislation.

No; none of these oft-named causes can explain the case. They are all eliminated by the facts of area, date, &c. There has been some great, all-embracing cause which began to operate in 1873, and has operated ever since with steadily-increasing disaster, until it has caused the most widespread and ruinous fall in prices known in the history of modern civilization. You have asked me to point out that cause, and I therefore say that, after long, patient and, I think, un-biased study, I am forced to see that this overshadowing, all-embracing cause has been the virtual demonetization of silver in 1873 by the chief commercial nations of the world and its final dishonoring in 1893. We shall not soon forget the fearful collapse of 1893, which history will rightly call both child and father of the final act in the world's twenty years of currency-tinkering, the final abandonment of the joint-metal basis for the currency which had successfully steadied commerce and prices for centuries.

Let me state certain facts and reasons concisely, recapitulating in part:

1. Up to about 1873 most of the chief commercial nations had used both gold and silver jointly as the money of final redemption and adjustment of balances, *or* the single-silver-using countries about equaled the single-gold-using one (England since 1816), and the value ratio of about 1 to 15½ was maintained between the two metals for some 75, indeed 200 years, with utterly insignificant variations at any time from the average *legal* value ratio of the nations.

2. About 1873 a large part of the chief commercial nations changed to the monometallic gold basis and still others in 1893, or some of the same ones adopted it more fully at that date, *and* the value ratio of the two metals has since gradually parted company until it is now about 1 to 34, and the actual silver in a standard dollar to-day, January 16th, is worth only a little over forty-seven cents in bar silver; that is, the value of gold has a little more than doubled as measured by silver; and nearly the same is true if it is measured by most of the chief commodities of agriculture and commerce.

3. This change of ratio cannot be due to recent relative over-production of silver, for the world's total output of silver from 1792 to 1850 (\$1,690,217,000) was almost exactly twice that of gold (\$848,186,000); while that of gold from 1850 to 1873 (\$2,724,825,000) was almost exactly two and one-half times that of silver (\$1,150,025,000), *and* in neither of these periods, under general bimetallism, did the actual value ratio change materially, *but* from 1873 to 1892, under general monometallism, the output of silver (\$2,264,419,000) exceeded that of gold (\$2,060,897,000), *not quite ten per cent.*, and yet the value ratio of gold to silver has now almost exactly doubled. Why is this?

4. The facts just stated in 3 seem to show that the reason why gold has doubled in relative value since 1873 is *because of* the silver legislation of that date, and that it has done so inevitably, under the imperious economic law of supply and demand. For, up to 1873-4, gold had done only about *one-half* of the world's work of final redemption and exchange, while silver did the rest. But since that date gold under general legislation has come to do nearly the whole of that work for the world's chief commercial nations. This has nearly doubled the demand for gold for this purpose, and since its supply available for this use, that is, the surplus of the world's gold output above its consumption in the arts and industries and for ornaments—since this available supply, I say, has not much increased and apparently cannot much increase, therefore this relative doubling of value would seem to be the result of doubling the demand by the legislation referred to. For that legislation is the only changed condition or important cause which has operated *since* 1873 and not *before* that date.

5. The following proposition seems capable of both historic and economic proof, namely, that what makes prices of commodities

high or low, in the long run and the large way, is the relative amount of the *money of redemption and exchange* which is in existence at any given period, through the *mine* output, based upon discovery and enterprise, and the *mint* output, based upon general legislation. That is, prices rise when the coin or money bullion increases relatively to commodities, and *vice versa*. For example, as to the metallic basis, the newly-discovered silver mines of the new world shortly after 1492, raised general prices and brought greater prosperity; not to Spain alone, but to the entire old world. Again, the newly-found gold of California, beginning in 1848, soon brought higher prices of commodities and greater prosperity, because the "actual money," or "money of final redemption" was rapidly increased relatively to commodities. The same was true after the discovery of gold in Australia, closely following its discovery in California. The same has been true often in the past whenever either of the then honored money-metals has been greatly increased; and the converse has been true whenever either has been greatly decreased for any cause.

For example, in the way of decrease, when silver was generally demonetized by law in 1873, the effect on gold and on commodities was the same as it would have been if the world's silver mines had gradually been closed. They were closed for "actual money" uses. Of course gold went up and general commodity prices went down.

No one questions that our inflated war currency was the chief cause of two-dollar and even three-dollar wheat, and of wool at eighty cents to a dollar, during the war period; for the *coin* prices of commodities did not advance except somewhat because of increased demand through the great wastefulness of war and decreased supply through the great absence of producers gone to the front, while "greenbacks" were the "final money" here for the time for commodity uses, and their relative amount was very large.

To me it seems amazing, nay, dishonest and foolish, that most gold men insist that gold alone has remained "fixed" in "absolute value," and that all other commodities have actually "fallen." If you look at a "6" wrong side up it becomes a "9." The gold men still hold the Ptolemaic, geocentric theory in finance. Does the sun, then, indeed revolve around the earth in finance? Is Brother Jasper right in saying "The sun do move?" Does the shore recede from the

ship, or the tail wag the dog? Was the tipsy Indian really not lost, as he asserted, and were the squaw, the papooses, the wigwam and the Indian village—were they all lost? The old woodchopper back in the Maine forests, you remember, asked the scientist, Thoreau, "Where do you live, anyway, mister?" "In Boston," was the reply, uttered with metropolitan impressiveness. "Don't ye kind o' hate to live so blamed fur off?" was the honest and unconscious comment. Do, then, all the rest of earth's commodities live "fur off," while gold alone lives at "the hub?" Is it so inconceivable that the disuse of half our total stock of money-metals should increase the demand and raise the relative value of the other half, exactly as it has actually done? If the hard-coal mines were suddenly consumed by fire, buried by avalanche, or their entire output defueled by law, would not the *real* price of soft coal rise? Not as valued in terms of soft coal, but in terms of average commodities. A ton of it would still be worth a ton of it, and no more. Just as a dollar—in gold—is worth and always will be worth, a dollar in gold; no more, no less. In that sense, neither gold nor anything else on earth can ever either rise or fall in price or value.

Take another example. If wheat, which gives the cereal food for half the human race, let us say—if wheat were destroyed as human food, defoodized, so to speak, by insects, frost, blight or international law, would not rice, corn and other possible bread-foods rise in price, especially since rice and corn are not well suited to wheat soils and climates? Is not the same true of gold? It cannot be mined to any extent in the silver-mining regions, while that only by mining the silver, too; and that will not be so much mined at half its former price, thus diminishing the gold output. Nor can the gold output, in spite of the discoveries of 1886, be materially increased per capita, except at greatly-increased cost for working gradually-exhausting ores and alluvial stores; under the stern economic law of "diminishing returns."

"*The personal equation.*" The whole opposing party sneered when General Hancock, candidate for President, said that the tariff was "a mere local issue." And yet that was true in the following sense: That each locality is apt to favor or oppose the tariff exactly in proportion as it helps or hinders local pecuniary interests. The same in general is true of the question of bimetalism. The creditor, money-lending and "fixed income" classes, as a rule, naturally favor gold

monometalism, in order, one would naturally think, to have their debts paid in more valuable dollars than they lent. But the debtor classes, the agricultural, the manufacturing, and in general, the producing classes, desire the old, time-honored, bimetallic basis. Is it, therefore, a mere selfish fight between creditor and debtor, with no real moral question at the bottom? Far from it. Let it never be forgotten that it was the gold monometalists who were the innovators, the radicals, the revolutionists. Let the historic fact be reiterated until it is at last heard and believed, that it was they who disturbed the bimetallic currency basis which for two hundred years, at least, of civilization and semi-modern commerce had been the solid basis of reasonably-steady prices, and that they, the gold monometalists, have brought in the new, varying, necessarily-rising, monometallic gold basis, which even in the twenty-two years since 1873 during which it has been on trial, has shrunk commodity values nearly 50 per cent., and ruined millions of sagacious and industrious men. Herein lies the moral issue. The producing classes and the debtor classes ask simply a return to the old basis, which never, in this country at least, was abandoned with their consent or even their knowledge. They claim the moral right to pay the same sort of dollars that they borrowed or contracted to pay for purchased property. Consistent bimetalists refuse to be classed with fiat-money men.

The latter, as the term is commonly used, desire no actual precious-metal basis of values; and that means a possible currency inflation with final depreciation and collapse as extreme and as fatal to all lines of business as that of our Continental currency after 1776, or of the Confederate currency after our late war. But the gold-monometalists also ask, and have got, a fiat money basis, a *change* by fiat of the law from the old, and tried, and steady, a constantly-appreciating dollar, with commodities, therefore, already depreciated nearly one-half, and with widespread prostration of agriculture, mining, manufactures and commerce. Shall we refuse to learn anything from the failure of the Baring Bros., involving \$140,000,000; the Argentine collapse, the crash of well-nigh all the banks in Australia, the Homestead fight against inevitably-falling wages, the panic of 1893, the Debs war really for the same reason, and the final fall of silver and of wheat to 50 cents—all caused chiefly by the doubling of the dollar measure?

If I contract to pay a future debt in bushels, and the law mean-

time doubles the bushel measure, I suffer a great injustice; but only along the line of things measured in bushels. If I contract to pay in pounds avoirdupois, and, meantime, the pound weight is doubled by law, I suffer a great injustice; but only along the line of things measured in pounds. And the same is true in case of feet, yards, acres, days' work and the like. But all contracts are made in *dollars*, and when the dollar measure is doubled, as it has been in effect, then the outrage reaches the entire financial world, and to-day that financial world is writhing in the tightening grasp of the octopus, the devil-fish, of gold-monometalism.

This doubling of the measuring unit of value strikes different classes with varying harm or favor, and that makes the injustice the more insufferable. The debtor finds his debts are doubled, taking twice as much of average products to pay them as in 1873. The aged farm-owner who wishes to sell his farm, invest the proceeds, and thus live on the interest of his life's earnings, finds that he will have but half as much money to lend as if he sold the farm twenty years ago. He who manufactures time commodities on a falling market loses in two ways, as follows: Mr. Lewis Miller, inventor and chief founder of the great Buckeye works, Akron, O., lately told me that between the original outlay on, and the final payment for each mower and reaper, an average of about three years elapses. By that time, prices of machines, especially since demonetization and resumption, have so rapidly and steadily fallen that a new machine could be bought for less than was still due on the old one bought three years before; and hence, irresponsible parties would repudiate the debt on the half-used and half-paid machine. From this cause alone, he said they had probably lost \$1,500,000, besides all shrinkage in price of material and work, where machines were sold for cash or for solvent notes.

It is often said that low prices do no harm, for that what we buy will balance what we sell in cheapness. This is not true in fact, for, first, the history of civilization shows that general prosperity goes with fairly high prices, and that these exist when the money of final redemption and adjustment is relatively plenty. I assume this to be conceded, and will not offer proofs beyond those incidentally given in another connection. But, second, the reason offered for the false fact is itself not true. What *producers* buy or pay does *not* balance what they sell in cheapness. Producers *sell chiefly*; for example, farmers.

On them low prices of commodities are especially severe, for they sell more commodities than they buy, and the balance available for "fixed charges" is smaller if prices are lower; for the trouble is that much of what they must pay for is not of the commodity sort, and has really shrunk little in gold price. Taxes, insurance, county and State officers' salaries, hotel rates, car-fares, salaries and fees of lawyers, doctors, teachers, professors and ministers, school and college tuition and expenses for our children's education—these and similar things that belong to man as a man, and not as a mere animal—these things, through combinations and legal enactments, &c., cost fully as many *dollars*—indeed, more on the average—than from 1840 to 1873; and each *dollar* now costs twice as many bushels of wheat or pounds of wool or cotton as in that former period.

For example, for the night's sleep and day's meals on the fast train that brought me hither I paid \$6.50, the present Ohio price of thirteen bushels of wheat, and that is about the average yield of one *acre* in Ohio for the seven years ending with 1892—an *acre's* yield of wheat for a night's sleep and a day's food, the butter (?) at that being made from steer's milk! Even for farm labor the farmer must pay nearly the rates of the seventies; for the labor unions have nearly kept up the price *per day*, apparently preferring idleness half the time to reduced wages when they do work. This all makes it specially hard on the farmers.

Of course, on the other hand, those who have fixed incomes seem to find low prices of *commodities* a help, for they buy commodities more than they sell them; but even these classes will find in time that a policy which impoverishes the land and ruins creditors and producers is not the best or wisest on the whole. Interest and dividends fail, stocks and bonds shrink, and even the principal on mortgages is not all recovered and new loans and discounts are slow.

Upon the debtor class, however, as has already been remarked, this doubling of the dollar measure of value has been hardest of all. Farms bought and debts contracted in good faith when wheat was \$1.18, the average Eastern export price in coin for fifty years before 1873, must now be paid with money got for wheat at 59 cents, the present export price in gold. An India rubber tape-line is a bad standard for measuring cloth or land. The fur-trader's right hand was a terribly variable "pound weight" when he had "lost his pound weight" in trading with the Indians; and an elastic dollar is

even worse for measuring values and time debts. Well does the Rt. Hon. A. J. Balfour, of England, say in his great London address, August 3d, 1893: "We ask of a legal-tender that it should be a stable measure of value, and * * * that it should be a permanent and fair register of the amount of indebtedness; we ask that if debts are contracted in terms of a given standard of currency, debts which take many years to mature, at the date when they do mature neither the debtor nor the creditor shall find that he has, through the altered value of that standard, to pay or be paid more or less than the original amount that was borrowed" or contracted for.

But, you say, if these things are so, why do not the people rise and demand a return to the time-honored and approved bimetallic basis of steady prices and general prosperity? For several reasons, chiefly this, I think: because the "fixed-income classes," money-lenders, bankers, salaried and professional men, have thus far controlled most of the thinking, talking, writing and law-making on questions of currency and finance. Most of the great papers and magazines are owned and edited in the interest of gold monometalism. They exclude discussion, or make it one-sided and unfair. They bandy epithets: "Dishonest dollar," "fifty-cent dollar" and "fiat money," for all who favor the rational and time-tested plan of bimetalism; "crank," "calamity-howler," "business failure," &c., for all who have long borne the burden of a shrinking market, and who think the single-gold basis is responsible for it. They predict financial ruin in case we return to the joint standard, and they warn widows and orphans that they will lose half of their savings or funded capital. They declare stoutly that gold has not risen in real value, though all can see that it has; that bimetalism is impossible, though it has been actual for centuries—and so on to the end of the long chapter.

For example, the "Century Magazine" for December labors to show that improved machinery caused the fall in prices, and then forgets itself enough to hedge and claim, on the other side, that gold cannot rise, since improved machinery is used in its production! Then gold should have fallen as much as commodities down to date, and that means no fall in prices of commodities!

So, too, Henry Dunning McLeod, in the September "Nineteenth Century," reprinted in full in the Cleveland "Leader" of December 8th, argues that because gold and silver, *even when joined* in legal ratio, have in a century sometimes varied five or six per cent. from that

ratio, therefore we should cut the connecting link and let them vary 100 per cent. from each other, as gold has already actually done now from silver. A compensation pendulum, let us say, is found to have slight inaccuracies in spite of the fact that the steel expands downward and the mercury upward to keep the center of gravity an equal distance from the oscillating point, and so he proposes to abandon the compensation principle altogether and let the steel expand and contract with heat and cold and the clock run slow or fast at will. Two reservoirs, each with independent supply and exhaust systems, have a connecting pipe, to use the well-known illustration of Jevons, but still are found to vary slightly, and so he proposes to destroy the connecting pipe altogether (instead of enlarging it), to make the levels correspond more nearly. Two per cent. of the married sue for divorce, therefore he would abolish marriage altogether and let lust regulate concubinage.

So, too, Louis A. Garnet, in the January "Forum," 1895, argues to prove gold has not risen in price, in the face of the facts I have given, or rather by suppressing and ignoring them. Is it not amazing that learned men should still make the sun move around the earth in finance?

Then, too, R. E. Preston, Director of the United State Mint, in the January "North American Review" scours the world's gold mines to prove that there is no shortage of gold. His entire "output" from pages of selected figures "pans out" in the following sentence, quoted word for word from him (page 46): "The [world's] output of gold, therefore, in 1893 was 16.08 per cent. greater than the annual average of the period 1856-60 of the greatest production of the Californian and Australian gold mines." Notice the unfairness of comparing a single year, the highest by far since 1860, with a five-years' average. Why did he not compare the entire period of seven years, since the discovery of the gold mines of South Africa, up to 1893, with that former Californian and Australian boom, 1856-60, and admit that that period exceeded this in average gold production by 35.59 per cent., the wrong way for his beloved theory? Why did he not admit that silver then did half the world's final redemption and balancing of exchanges, but that gold must now do it all, and that then commodities brought living prices all over the world, while now we have stagnation, ruinous prices still falling, hordes of tramps, Coxey armies and Debs wars and seem on the very

verge of anarchy? Truly "figures will not lie, but liars will sometimes figure." We should have far greater respect for gold monometalists if they frankly admitted or boldly asserted the rise of gold, as a few in fact do, and claim it an advantage because of the general lowering of prices.

Another reason why the mass of the people have not more strongly demanded a return to bimetalism is not only that the facts have been suppressed and perverted as already indicated, but that most of the producing classes have not had the education, the time or the means to investigate the somewhat difficult questions of finance and currency. They did not know that silver was demonetized until long after the fatal law was passed in the United States in 1873 and about the same time quite generally in Europe. But that law was quietly, not to say stealthily, passed. One fact that made it less noticed was the fact that no coin was then in circulation here and hence the silver did not disappear, because it was not in sight; and so the financial distress that came from 1874 to 1879 was charged chiefly to resumption, though in large measure due to the demonetization of silver. For the resumption act was passed in 1875 to take effect, however, not until January 1st, 1879, and "cast its shadow before." Immediately upon the passage of that widely-discussed and much-heralded act, the gold *unit* (made such in 1873—always before our *unit* was silver) which had already begun to appreciate all over Europe and England under the silver laws of 1871-74—this new *gold* unit of valuation now appreciated far more rapidly in the United States under the combined action of the dishonoring of silver and the certainty of *gold* resumption under the combined action of the laws of 1873 and 1875.

Then the debtor and producing classes entered upon a period of the greatest hardships since 1837, worse here than in Europe, if possible, because of our war-inflation. The indebtedness of these classes and the war debt of the nation—to be paid by these classes—both increased with ruinous rapidity *as measured by* the constantly-falling prices of the commodities and real estate by the sale of which those debts must be paid. It was an era of disaster and bankruptcy, and the latter was even *checked* only by the passage of the Matthews Senate resolution declaring we had a right to pay all debts in silver; of the Bland Silver law, a half-hearted compromise that still made silver mere merchandise, and of the Bankruptcy law of 1878. Prices

continued to fall until the Sherman Silver law of August 13th, 1890. This was a compromise to still the clamor for a real return to bimetallism; and yet half-hearted and traitorous to silver though it was, and though like the Bland act it distinctly made merchandise of silver and not an honored pricing unit, still as its friends praised it and as it coined silver in large amounts and seemed to use it as money, it raised hopes of final bimetallism and therefore, for a time, raised prices and seemed to renew prosperity. For example, silver in the world's markets jumped from 1 to 22.09 in 1889 to the ratio of 1 to 19.75 in 1890, and cash wheat in Cleveland, O., rose, apparently under this impulse, from eighty cents, September, 1889, to \$1 September, 1890, and \$1.03 September, 1891, in spite of somewhat increased crops in Ohio and in the United States for those two years. (See Table IV., page 128.) Still, as silver again began to fall in Europe in 1891, and worse in 1892, men began to see the real fault of the Sherman law, a wolf in sheep's clothing, and the fall in prices of silver and of the leading commodities went on with accelerated speed.

Then finally came the demonetization of silver in Austria-Hungary January 1st, 1893, with its call for \$150,000,000 in gold, furnished by a syndicate and drawn partly from this country. Then followed the closing of the mints of British India to silver June, 1893, and the final repeal of the Sherman Silver law November 2d, 1893, virtually closing our mints also to silver, even as sign money.

By these three acts, some 350,000,000 people were added to those before competing for gold as the sole money metal. Of course, gold advanced still further, or as some prefer to say, prices of silver and of other commodities went down until wheat in central Ohio reached 45 cents, and general commodities reached the lowest point ever known all over the world.

I have thus traced in your hearing a small part of the evidence which I myself have studied with great care during the past few years, and which seems to me to prove to any unbiased mind, beyond the possibility of doubt, that the one great, over-shadowing, all-embracing cause which has depressed agriculture and brought disaster to countless industrious and sagacious men, has been the abandonment of the bimetallic or joint gold and silver basis for the currency of the world's chief commercial nations.

I am asked by your Secretary to "show, if possible, that by the

proper means, educational, industrial, economic and legislative, there is hope for American agriculture yet." First, then, the economic and legislative. By the united and strenuous efforts and insistence of the agricultural and industrial classes, we must simply compel our Representatives and Senators in Congress to *return to the sound, bimetallic basis, and the former steady, living prices for our commodities.* Let the return be by international agreement, at least between two strong nations, if that can be done speedily; but if not, then by the free and impartial coinage here of *our own silver output*, and shutting out all other silver from that right, and granting special reciprocity and duty privileges to silver and bimetallic nations.

Our shrewdest economists, like President E. B. Andrews, of Brown University, declare and seem to prove by *a priori* reasoning that this would win for us and away from England a large share of the manufacturing for the silver-standard nations and force her into virtual bimetalism. We must compel our servants to undo by present legislation the grievous wrong done us by past legislation. The doubling of the money unit or the "pricing unit" is the one great, all-embracing cause of our distress in agriculture. Minor causes have helped to bring depression. This has brought *revolution*, as your Secretary fitly puts it in his letter.

Let us all unite and remove this, the chief cause, first of all, and then attack minor causes. Let us not whittle toothpicks to plug holes in the barrel staves, while the precious wine of our prosperity is flowing forth from both the bunghole and the spigot. When we have stopped the ruinous flow from these, then let us unite and stop all pinholes, all minor causes of depression. Adulteration, for example, which is actual counterfeiting and stealthy theft; grain-gambling, which is both immoral and hurts our honest business, and hurts the country; excessive express charges, which often absorb all profits from growing perishable fruits and truck; the clutch of gamblers, which seemed to hold your historic State by the throat, until *the farmers* shook off the throttling hand; awful municipal corruption, like that disclosed at our great metropolis, by Dr. Parkhurst and the Lexow committee. These and similar things.

Let me speak more fully of a few of the minor evils referred to above, which hurt the profits of the farmer and the fruit and vegetable-grower. We, in the Middle and Western States, are informed that excessive express and commission charges have, especially in

years of abundant crops, absorbed the profits in some of the best peninsular fruit regions of the Atlantic coast. It seems to be assumed that express companies are free from the laws and the judicial rulings which have declared the railroads to be *not* private concerns, with the right to charge what they will, but common carriers, public servants, using the nation's right of eminent domain, and hence bound to render good service at fair rates, and not to discriminate for or against persons or places. The same is true of express companies using railroad service, and must be so held whenever brought to the test.

But there are other ways of reaching the matter, sometimes. For example, west of Pittsburg, in Ohio, the express companies were absorbing all the profits of the berry-growers, who appealed in vain for living rates. So the berry-growers combined, ordered freight cars, loaded late in the evening, and their berries went in the night by fast freight, reaching market actually in better condition than formerly by express, and at about one-quarter the expense. Then, forsooth, the express companies were on their knees before the combined fruit-growers, to recover their lost custom, but in vain. They even tried to get the railroad company to refuse freight cars, but thanks to former combined Grange effort, the State and interstate laws forbade such refusal.

Again, the railways and the commission-men proved themselves unable or unwilling to handle the vast grape product of the great lake shore grape-belt of Ohio, in such a way as to distribute it over the land with profit to the growers and reasonable prices to consumers, and the great Ohio Lake Shore Grape-Growers' Association was formed, and now handles about a million dollars' worth of grapes each fall, with profit to the growers and with more uniform and lower average prices to consumers in our great cities and our great non-grape-growing Northwest, and with better satisfaction all around, even to the railways and the commission-men. This great association orders the needed fast-freight cars in advance for all shipping points, inspects, grades, brands, guarantees all grapes, and distributes them, with minimum friction and at minimum cost, with mutual profit to producer and consumer. No doubt you have similar associations here.

These are mere examples of the sort of work that we farmers and fruit-men must do to make a living nowadays. We must protect our crops and stock during their growth from insects and blight, and when they are ready for market we must follow them clear to the

final consumer. We must fight and overcome or destroy all that interferes with our just profits, whether it be the hazards of growth or the worse hazards of finding a profitable market; whether it be a doubled pricing unit, which shrinks our gross cash receipts one-half "at one fell swoop," or adulteration, which supplants our true and honest products with a false and counterfeit; or grain-gambling, which sells more fictitious wheat in a month than the nation's farms can grow in a year, thereby obscuring and reversing the proper influence of supply and demand; or unfair freights, expressage and commission, which sometimes get more for their single day's time spent on our products than we have left for the year's time it takes us to grow and ship them—*whatever*, I say, stands adversely between our products and their final market, it is our business to counteract, overcome or destroy as persistently as we do all opposing influences on the farm during growth.

I have little patience with those who pat us farmers condescendingly on the back and say to us, "Devote your time and thought exclusively to growing your crops and maturing your stock, and the world will find a market for them." That is just what the modern world will not do. The manufacturers watch even all *proposed* laws that make for or against their business. They fill our railway trains and hotels with "drummers" and our newspapers with advertisements, spending fully one-half of their time and money in selling what they make; and they must do so or fail. But farmers, too, are manufacturers, and must practice the same modern methods, in part at least, to meet our modern markets.

All this requires increased intelligence. Hence the pressing need of better country and graded village schools for our children, more social contact and mental spur and training for ourselves, through the Grange, Alliance, Farmers' Club, County Horticultural Society, Farmers' Institutes, and through meetings like this of the leaders in agriculture; and a more constant and careful attention to all existing or proposed laws that do or will help or hurt our calling. And all the time, *of course*, we must do better work in drainage, manuring, tillage, rotation and the use of clover; in breeding, in feeding, in housing and caring for crops, stock and implements. To those who bid us attend wholly to this latter class of work and let the other all go, the Scripture aptly says: "These things ought ye to do, and not to leave the other undone."

The chief sign of hope, so far as legislation is concerned, is the ease with which voters lately cross party lines. The party for thirty years in power went down in bitter defeat in 1892, because of this ruinous fall in prices; and high tariff took the blame. The party then elected to power will no doubt go out in far worse defeat; and low tariff will get the blame for the increased depression. That depression, mark my word, will not cease until some party comes into power *wise* enough to see that it was the *doubling of the dollar measure*, and not chiefly the tariff, which shrunk to one-half their former value all commodities measured by that new standard of value, and to see that our present 200-cent dollar is quite as bad as a 50 cent one, but that what we *want*, and *will have*, is the old, bimetallic 100-cent dollar which we had before 1873, and that a false balance is still "an abomination to the Lord," and to all just-minded men. Of course we do not blame the inflated dollars of 1862-75 so much, which were a necessity of war, and which the producing classes never asked, and from which they would not have objected to coming back to the old and honored bimetallic gold and silver basis.

We meet to-day, close by the spot where, a hundred years ago, George Washington with his troops crossed the Delaware on the ice to resist England. And for what? For taxing us a little on tea and stamped paper, &c., and for doing it without our consent. But in 1873 our government, joining other governments, without the real consent or even the knowledge of one in ten thousand of our people, passed laws which now, by their ripened influence, are taxing us more than fifty cents each year on each bushel of wheat we grow, and which have taken half of its market value from each acre that grows the wheat!

Is it not time for us, too, to "cross the Delaware," and by peaceful but effective means compel our law-makers to undo that grievous wrong? [Applause.]

THE RELATION OF THE FINANCES TO THE AGRICULTURAL
INTERESTS OF THIS COUNTRY.

BY L. F. S. SCHANCK, MARLBORO, N. J.

Mr. President, Ladies and Gentlemen—As one of your delegates to the State Board of Agriculture, held at Trenton the past two winters, I had the pleasure of listening to almost everything from a

grasshopper's gizzard to a pig's stomach ; and I found they were related to us, not by blood, but to our pecuniary interests. The learned Professor from Cornell University told us that "if pigs are fed entirely upon corn, they will have a pinched appearance and only grow to weigh about 100 pounds, and that to make them heavy and profitable you must put stomachs on them ;" he also said he "sold his wheat at 79 cents per bushel and was ashamed to tell it," why, he did not say, but I presume it gave his purse a pinched appearance, like the pigs fed entirely upon corn. What you want to know is, what will put a stomach on your pocketbook. I care not if you look as if you have the dropsy and everybody you meet wants to tap you.

If I ask, what are farms worth here? you hesitate; finally you say \$70 or \$60 per acre, or anything you can get. Were they never worth more? At once you answer: Oh yes, I paid \$150 per acre for my farm, one-half cash down, and I have lost all I put in it. We must be related to something very material to our interests, since it has taken one-half our farms. Can it be crickets, or katydids, or grasshoppers? Oh no, for we have examined their gizzards, and they only damage the cranberry crop, and we do not all grow cranberries. Perchance it is the curculio, or codling moth? But we are not all fruit-growers, and whether fruit of tree or vine is high or low the value of farming land has gone downward. When wheat sold at \$2 per bushel, land was worth \$200 per acre; when at \$1.25 per bushel, \$125 per acre; when at 60 cents, its present price, \$60 per acre, or what you can get; when at 30 cents, its price in the West, land is worth—I cannot tell what—give it up. The price of a bushel of wheat, then, is not only a matter of profit or loss to the grower, but it fixes the value of every acre of farming land in this country, excepting the cotton belt, for the reason that it is the staple product.

It is estimated that every person in the United States consumes four and two-thirds bushels of wheat yearly; if the price is regulated entirely by the supply and demand at home, corresponding prices should follow an equal supply; if the supply is more than is needed, or what is termed over-production, the price should fall; correctly speaking, this can be the only over-production we experience, for the unconsumed is purchased elsewhere. In 1873 and 1885 the wheat exported and consumed at home, were nearly equal. In 1873, when 92,534,779 bushels were exported, and 4.46 bushels per capita were consumed at home wheat sold at \$1.42 per bushel, while in 1885, when

94,913,395 bushels were exported, and the per capita was 4.49 bushels, wheat sold at 87 cents; while the per capita varies but .003 of a bushel, the difference in price is 55 cents; in 1879, when the exports were 180,939,474 bushels and the per capita 5.35, two-thirds of a bushel more than was needed, wheat sold at \$1.24, while in 1888, when only 88,822,462 bushels were exported and the per capita was 5.03 bushels, wheat sold at 89 cents, 35 cents in favor of the larger per capita and more than double the amount of exports; or if by over-production is meant that we grow more than the world can use, and our market is the world, why did the total distribution of 457,763,616 bushels in 1890, sell at 14 cents per bushel more than 452,403,467 bushels distributed in 1889? From 1860 to 1873 the total production of the world increased each year 28 per cent. Prices advanced 40 per cent. From 1873 to 1885 the production of the world increased but 1.6 per cent. Prices should have advanced; but they fell 32 per cent. Competent experts have long since demonstrated that the belief in over-production is a mistake.

We are undergoing a change in the financial system of the world, passing from \$7,900,000,000 of gold and silver to \$4,000,000,000 of gold; the silver thus thrown into disuse, amounting to \$3,900,000,000 has therefore declined in value 53 per cent., as a medium of exchange for gold between nations, while at the same time it circulates where coined as money at its full coinage rate.

Money is a measure of values; not that it is the yard which measures space or distance. Should a purchaser desire your horse he will put down his dollars, one after another, until the sum is reached at which you are willing to sell; the exchange is then made, you taking the money and the purchaser the horse; the money has measured the value of the horse. With money everything you sell and all your purchases are measured. In the United States, whether it be the gold dollar, the silver dollar, or the greenback, the measure is the same; for the fiat which made them money has given to each, irrespective of its intrinsic value, the same paying quality.

It matters not, then, to the manufacturer whose sales are made within our own borders whether his collections are in gold or silver or bank notes; his interest is in his profits; which, under the protecting wings of a beneficent government, are always sure. It matters not to the railroad companies, with their lines extending the length and breadth of the land; their

interests are in such remunerative freight rates and passenger traffic as will pay interest on their bonds, and dividends on their preferred and watered stocks. It matters not to the lawyer, his interest is in his fees and good-paying clients. It matters not to the banker, his interest is in his dividends and the premium upon his bank stock. But to the agriculturist, who for his staple products must find a foreign market, the question comes, what is the measure and the unfavorable conditions, if any, surrounding it?

Great Britain is our best market, taking in 1892 \$493,957,868 in value, or 48.63 per cent. of our total exports, which amounted to \$1,015,732,011, 78.79 per cent., or \$800,000,000, of which were the products of agriculture. England's measure is gold, its price is fixed by act of Parliament at £3 17s. 10½d. an ounce; its unit of value is the pound sterling, 123 171-623 grains of gold of the standard of 11-12. The exchange, then, for American products is made upon the gold basis. Never with our silver dollars, for while they circulate at home for 100 cents, they are only taken in England by weight at the market price of silver, now about 47 cents, a loss of 53 cents, a sufficient reason why they are not found abroad.

But in the London market are many competitors with a silver measure; among them is India. Its unit of value is the silver rupee, which circulates as a legal tender at 47.37 cents, and these coins are the basis of its exchange with England. In London they are taken by weight at the market price of silver now (March 9th, 1894), 27½d., about 22 cents in gold. In the remittances of India to London of £17,000,000 yearly, for interest upon a large public debt, its loss from the depreciation of the silver is more than £7,000,000. If I ask what is a foot? you say 12 inches. What would you think of a foot rule that would stretch to a yard? The rupee worth 22 cents in London, but which at once stretches to 47.37 in India, is our competing measure in the wheat market in England. The difference in the value of the rupee in London and India is 25 cents, which is added to the price per bushel as many times as there are rupees in the sum at which the India wheat sells in London. If it be 66 cents in gold, which is equal to three rupees at 22 cents each, 25 cents is added three times, thus increasing the price of the India wheat 75 cents per bushel, a premium of 113 per cent. And this is the advantage the India wheat-grower has over American wheat. The market then stands: Wheat in London, 66 cents; American wheat, 66 cents; wheat in

India, \$1.41; American wheat at a discount of 53 per cent. All sold in the same market. Conclusive proof that the price of wheat follows the rise and fall of the rupee is found in 1890, when silver rose 12 per cent. and American wheat advanced 14 cents per bushel; also in 1892, when silver fell 17 per cent., wheat dropped 17 cents per bushel. The exports of wheat from India in 1892 were more than double the amount of previous years, and the acreage of 1893 was increased 6 per cent. From European advices it appears that even the present price of American wheat is too high to admit of heavy sales in competition with sellers from the Argentine Republic. They "are reported to have sold wheat recently at prices equivalent to 37 cents a bushel, f. o. b. at New York." Should the enormous premium of 113 per cent. continue we shall be driven out of the market. The truth is we are already out upon the only true business basis of paying prices. In the cotton market is the same 113 per cent. premium, and while it has advanced competing cotton it has reduced the price of the American product below the cost of production.

The head of a large foreign house says: "The last move of the India Council * * * brings India cotton and India wheat into sharp competition with American produce."

One of the representatives of the India Government to the World's Fair at Chicago said in reference to the exchange that "the premium is of great advantage to India. The rupee is a rupee in India."

Mr. Celis, Mr. Casarus and General Mena, of Mexico, say: "The depreciation of silver * * * has produced an actual premium on exports. Articles which were not exported formerly are sold now in the markets of Europe and the United States at a loss of 8, 10 or 15 per cent. on the cost of their production and the expenses incurred, because compensation is found in the gain in exchange of 25 or 30 per cent., corresponding to the depreciation of silver, and for this reason the export of articles other than silver has risen from \$6,000,000 in 1873 to \$27,000,000 in 1891."

The importer of wool from silver-standard States has only to exchange the gold he receives for silver of his own country to add 113 per cent. to its price. And these many years it has beaten the wool-grower in his own market. The wonder of the thousands of wool-growers in this country has been, not only that the price of wool has declined, but why a protective tariff of 40 per cent. did not advance

its price. But our law-givers failed to see that the premium upon our competitors' silver must first be added to the price of the wool, to place the growers on equal terms, and that to raise its price the intended 40 per cent. it must be added to the premium upon the silver, now about 113 per cent., making the tariff 153 per cent. And the premium does not stop with the wheat and cotton and wool, but is added to every competing article from silver-standard States, when sold in a gold market.

It has been found in England that from 1873 to 1885 114 commodities declined 30 per cent. Another investigation shows that as compared with the ruling prices from 1867 to 1877, the general range of prices from 1877 to September, 1887, had fallen 68.7 per cent., and proportionate depreciation is reported in every country in Europe.

That these results should follow such conditions is not strange—it is natural; it is simply business. If your competitor in the market has an advantage of 113 per cent. he will drive you out or into bankruptcy every time.

A cotton manufactory has recently been opened in Mexico, costing \$5,000,000. What do you suppose they are going to do with it? The Mexican dollar is worth 48 cents here, and they start with a premium on their goods of 109 per cent. "The London Chamber of Commerce has just presented to the English Government the urgency of the re-assembling of the International Monetary Conference, with the view of finding some remedy for the heavy fall and violent fluctuations in silver, which are declared to be causing grave injury to Eastern trade." The commercial world is reeling on to a crisis.

One shot from the Brazilians, and Admiral Benham was ready to answer with a broadside. One hundred and thirteen per cent. premiums are heavy guns, but our competitors are giving them to us right into the broadside, and not a shot has missed yet. Eighteen years of bombardment.

The subtle influence of this unnatural competition, the game of nations, has crawled in the dark, gnawing alike at the welfare of the poor as of the rich, and is the product of two kinds of dollars, one worth 100 cents and the other 47 cents.

But Secretary Carlisle would shield the government by telling us that "the government cannot create money;" that it cannot create money as we are created is true, but if it is intended to mean that the government cannot make money, it is a perversion of language. The

Steel Trust does not create steel rails, but it makes them ; bricks are not created, but they are made. The government takes the gold and coins it into money ; it makes it, aye, and it does more, it fixes its value ; the silver it takes it also coins into money, and unfixes its value. The length of the yard is fixed in England by act of Parliament, which reads as follows : " That the straight line of distance between the centers of the transverse lines in the two gold plugs in the bronze bar deposited in the office of the Exchequer shall be the genuine standard yard at sixty-two degrees Fahrenheit." Even the temperature is named at which the metal must be measured to be the genuine standard yard. If so much care is necessary to fix the length of the yard measure, is it not still more important to fix the value of the money measure ? Senator Hill said in the United State Senate that " the legal tender quality which is given to it [silver] by law determines its value." If that be so why is our silver dollar, which is a legal tender, worth but 47 cents ? or why is the rupee, which is a legal tender in India for 47.37 cents, worth but 22 cents ? The legal tender quality of money is simply its paying quality in the State where the law which makes it a legal tender is in force, which may or may not be its value. The value of money is its worth as expressed in units by price. In the same speech, Senator Hill said that gold " has no price in the United States." I deny it. Why is a gold dollar worth a dollar ? For the reason that if you take gold of the standard fineness—that is, 900 fine, or pure gold—of the value of \$100 or more to the United States mint, for every 23.22 grains you can get \$1 and no charge for coinage ; the price is fixed by law and is the same every day, every hour, and every moment, always fixed. The mint is practically a gold market, open to all comers at a fixed price ; it takes the gold at \$1 for 23.22 grains, the 23.22 grains of gold it coins into \$1, the price of the gold as bullion is its value as money, always the same, a fixed measure of values, \$1 worth 100 cents. The reason why a silver dollar is not worth a dollar is, that if you take $371\frac{1}{4}$ grains of silver to the mint, the amount required by law in the silver dollar, you cannot get a dollar for it. The silver the government takes, if at all, at its market price ; the market price is therefore its value as money, and its value as money is its market price. On the silver dollar it stamps one dollar (100 cents) when it is but 47 cents ; 47 cents in the London market, 47 cents when the government buys it, and 100 cents when you take it. The fault is not with

the silver but in making its value its market price, which may be anything. Can this be the right way to make money? It is the wrong way. It is a violation of every principle of monetary science. Science is acknowledged truth. The science of money as well as mathematics must be founded on fact. Did you ever hear of two added to two making three? two and two make four every time; will five added to five make eight? never, it is always ten. Science knows no contradiction. And yet the science of money in the hands of our law-makers has developed the anomaly that one dollar added to one dollar, 100 cents added to 100 cents, make 94 cents.

It is worse than three-card monte, in which you are in the hands of the dealer, for at this game 65,000,000 of the people are its victims. It is worse than the faro bank with ninety-nine chances against you, for here every chance is against you and you are the loser every time.

The Berlin correspondent of the London "Standard" says:

"A new monetary conference is no longer a Utopian project. The movers have drawn up a plan for the conference and propose to submit it to the countries concerned. The leading principles are:

"The United States, France, Great Britain and Germany are to form a monetary union. The United States are to buy and use for currency purposes \$10,000,000 worth of silver yearly. France, in behalf of the Latin Union, is to buy \$4,000,000 worth of silver, Great Britain and Germany are to withdraw all gold and paper below the denomination of the sovereign, buying, meantime, \$375,000 worth of silver annually. India is to resume the unlimited coinage of silver."

Here it is, and it may be presented—that the United States shall buy; that France shall buy; that Great Britain and Germany shall buy; what then? That your values shall be measured by the market price of the money they make. If you had sold your farm by the acre, and found a surveyor measuring it with a rubber tape line, you would soon ask him what he was doing and tell him to get out, for you would know you were to be wronged. The law of money is, and it knows no change, that if the market price is made the value of the bullion, its value as money will be its market price. With the market price of a metal then in the hands of your competitors, which is as elastic as a piece of rubber, it is proposed to measure the value of your farm, your corn and wheat and all you have; aye, and the value of every farm, and all of every man's holdings in these United

States. It is measured with it already. The purpose is to continue its burning wrongs. Under this system the profits of agriculture have withered and died, and in other branches of business deprived of its legitimate support, the insolvencies of the past year exceed all previous records—transportation interests, \$1,700,000,000; commercial liabilities, \$331,422,939; banking and financial institutions, \$210,956,864; 16,650 failures. It is the most gigantic system of robbery human ingenuity ever devised—the fraud of the ages. Can you tell me a man it has not reached? Is it not high time, then, to be up and doing? I was attacked by a dog the other day; he was a monster. I was not afraid, for I stood before him with hedge-knife in hand, and I was ready. In this battle for business ascendancy are we ready, or shall we still stand like fatlings, waiting for capital's knife?

The farmers of America want every coin stamped one dollar by the government worth what it says it is—100 cents—or they do not want it at all. What shall we do with the silver dollars? If the government has no better use for them than to make them worth 47 cents and pass them to us for 100 cents, load them into a British ship, *one of our carriers*, and dump them into the London market, and we shall at least be on equal terms with India.

The demand for gold is increasing. The supply in the Treasury has been decreasing. To raise the reserve, the bankers would issue bonds, as appears in their numerous letters. As taxpayers, we make no apology for the inquiry, What is the size of the contract it is proposed taking? That the bankers are unanimous upon this point only proves they understand their own business, for prejudiced as they are by interest on the bonds, interest on their own issue and the premium they can make, their advice is in their own interest and worth nothing to the public. The present trouble is partly due to the advantage they have taken of the government to hoard gold, which was easy under its business methods. In the collection of customs the banks get the gold, while the government is paid mostly in notes. How can the government continue to pay gold with no supply? All duties should be paid in gold to the government. The burden is on the government, and it should take care of itself.

That distrust is not turning our bonds into gold is evidenced by their being at a premium. Were our streets paved with silver, Europe does not want it, or care what we have; but they do want

our gold, and they are getting it. Is not this rather a financial revolution? As there is not sufficient gold to go around, has not the question already come, Who will have it? When specie payments were resumed we had only to consider what was needed at home, while now is added the craze of all Europe to sustain the gold standard. What amount is needed? Who can tell? Austria-Hungary wants \$140,000,000 of gold. Italy, Spain, Portugal and the Argentine will also ask for gold. Should India adopt the gold standard, and it has already taken steps in that direction, making a total demand for more than \$1,000,000,000 of gold, are we to furnish it?

Our bonds are an open highway to our gold. With more bonds the road is still wider; they have only to be sold for greenbacks to take the gold. In debt, we are at the mercy of the world.

When all are supplied, which way for us to get gold.

The boom of the century has been in the West. Its cities are the marvel of the world. Although surrounded by rich agricultural districts, it cannot be supposed that their growth and improvement are the result of the farmers' remunerative trade, for with but scanty returns for their products, they had long since withdrawn as contributors to any outlay excepting such purchases as were necessary for a mere existence. The infant manufactories were the support of their many employes, and the money thus distributed a help to every business enterprise, but with the enormous outlay in plants and the capital required for their successful operation they could not at once furnish every public improvement. Bonds were therefore issued; electric light bonds for \$1,000,000; water bonds, \$1,000,000; sewer bonds, \$1,000,000; electric railroad bonds, \$2,000,000, and so on, each city its own bond-maker, amounting in the aggregate to untold millions. The bonds were largely taken by the banks, the additional 1 per cent. above the legal rate of interest in the State where the bonds were offered being the inducement for their purchase. The enormous sale of bonds starts the bank, and the money of the laborers upon the various improvements the savings bank. But the electric lights must be used, the water taken and people ride in the electric cars to make the bonds pay. In Sioux City, with but 37,000 inhabitants, there is office room sufficient and other corresponding improvements for a population of 500,000. The laborers go to the savings bank for their money; they call it a run, the savings bank to the national bank, and together they and their promoters fail. The

worthless bonds taken by the various banks were examined and their losses and failurer published in every newspaper in the land. The people were alarmed, and many depositors withdrew their money, believing it safer in their own hands. More than one hundred banks have gone down. They tell us it was a want of confidence and due to the Sherman law, but the want of confidence was in the banks, the result of their own losses and their own mistakes.

The national banks, the greatest subsidized institutions in the world, the government is nursing upon \$600,000,000 and over their losses, like the suckling babe, they went to their mother. Had it not been for the clearing-house certificates I think we should have lost the government baby.

The Sherman law has been repealed, and the depression continues.

The Eastern capital has been withdrawn from the West and the boom is over.

What can lift the mighty depression? 113 per cent. added to every bushel of wheat, that would make it about \$1.25, just right; 113 per cent. added to every pound of cotton and 113 per cent. added to every pound of wool can lift it. Remove the unnatural competition, the premium upon the wheat and cotton and wool and all competing articles from silver-standard States, and it is added. It will place \$200,000,000 a year into the hands of the purchasing masses. The lightning express from the city of Chicago was held up and robbed in open day, and the news was heralded the length and breadth of the land. But when the American Republic running for humanity and for God, is held up in the noonday of the nineteenth century and robbed of \$200,000,000, the year's profits of a nation's workmen, not a word is said about it. Newspapers, we want you to publish it. Tell the merchant, tell the manufacturer, tell every business man, that their customers have been wronged of \$200,000,000 a year for eighteen years; tell it until from lip to lip it is in every man's mouth, and then an earthquake will start every wheel of industry throughout our whole land. Must not the purchaser have money? If the fountain be dry the stream is dry and the mill stops. Need I tell you the public purse is empty; that the fountain is dry? You already know it too well.

Senator Morgan introduced a resolution into the United States Senate that "a committee be appointed to consider the relation of the finances to the banking interest," and to every other interest except-

ing the agricultural interest. A resolution was introduced at a meeting of the State Board of Agriculture, one of the most intelligent bodies of farmers in the State of New Jersey, petitioning the Congress of the United States to consider the relation of the finances to the agricultural interests of this country, and it was tabled as if it were a wild animal. If the agriculturists themselves will not consider their own interests, how can we expect others to consider them?

What was the most brilliant idea that ever struck the human family? To build a stair to Heaven; to climb into the Eternal presence on bricks in breeches! And they came down with confusion of tongues, speaking 3,000 languages. But the money-changers of the world would cure its intricacies in relation to finance, and in 1867 a Monetary Conference was held in Paris to inaugurate a uniformity of coinage, to substitute coins according to uniform regulations for the various types in use, and they were cursed with confusion of finance. It decided that "a basis for the monetary unification of the future should be sought in the gold standard." It was adopted by Germany in 1871, other States followed, and in 1876 the disruption began—\$700,000,000 in France, \$700,000,000 in China, \$900,000,000 in India; \$3,900,000,000 thrown into disuse or placed at a discount of 53 per cent. as a basis in the world's exchange. Finances of Europe in confusion, finances of America in confusion, farm-values destroyed, and culminating in a grand upheaval of parties. Is the creature greater than the creator? Silver money was ordered as an offering amid the thunder and lightning and quake and smoke of the mountain, and was good enough for the God who made man, but it is not good enough for the English banker and it is not good enough for some of our bankers.

Alfred de Rothschild says that "wheat at 30d. [60 cents] instead of 45d. [90 cents] is a blessing." What think you? Can you grow wheat and place it in the English market at 60 cents per bushel? That means from 25 to 50 cents upon the farm. Will it give the necessary profit to make you such a purchaser as will support other industries? I know it will not. Will it paint your buildings? It will leave them unpainted. Will it fence your farms? It will leave them unfenced. Will it buy the needed dress for the wedding? It will drive the wife and daughter into the kitchen, place the farm into the hands of the Sheriff, and at last pillow you in penury and want.

We believe in the law which governs Christian people, for it is the highest type of Christianity. "Do unto others as you would have them do unto you" is its teachings. Can any be found with us unwilling to pay the banker interest for his money? All are willing. But here is one of the most powerful bankers in all England, delegate to the Monetary Conference at Brussels, with four servants at his door to guard his slumbers, asking you for bread below its cost. He would make beggars of us all; he would feed us upon the crumbs from his table. Oh! is it any wonder that "it is easier for a camel to go through the eye of a needle than for a rich man to enter into the kingdom of heaven," or that he should ask for a drop of water to cool his parched tongue?

I read in the records of my country that the fathers bequeathed unto their sons their farms, unto their daughters their bonds and mortgages, and unto their wives their bank stocks. But what shall be our last will and testament? I give and bequeath unto my beloved son 40 per cent. discount upon all the wheat he shall grow during his natural life. I also bequeath unto him 50 per cent. depreciation in my farm, which is caused by the confusion of finance. I give and bequeath unto my beloved daughter 40 per cent. of debt which the laws of my country have given to others. The remaining 10 per cent. in my realty I bequeath unto my beloved wife, and unto my children's children the balance of my poverty and rags.

When shall these wrongs be righted? When shall we set our house in order?

"I asked the aged man, a man of cares,
Wrinkled and curved and white with hoary hairs.
'Time is the warp of life,' he said. 'Oh tell
The young, the fair, the gay, to weave it well.'"

If it be ever, let it be now!

The vast Coliseum at Rome is in ruins. Down in its cellar are the dens where the lions and tigers and hyenas and beasts innumerable were kept starved for the arena, and the rooms where the gladiators waited to be called into deadly combat. Its galleries once rose seat above seat until the outer wall was crowned 180 feet. In the arena living men were fed to famished beasts, and gladiators fought to die. The bloody Nero sat within the inclosure and feasted upon the scene, while about him 100,000 spectators "gazed in enchantment." Five hundred years its victims suffered the most abject

cruelty the world has ever witnessed, until "Telemachus, overcome with its horrors," leaped into the arena and closed its scenes forever.

The laws of the nation are a wall about us, and all classes are at the mercy of this financial monster. The agriculturists were its first victims, and now it has fastened its fangs upon other industries. England sits within its inclosure feasting upon the scene, and to-day I ask you, Who shall spring into the arena and close the scenes of the greatest financial disaster America has ever witnessed?*

Mr. Jessup—We have to-day listened to an address of far more importance to farmers than any we have had formerly. It was not made for a Democrat, a Republican or a Populist, but appeals to every patriot, and I therefore move you a vote of thanks for this able, interesting and instructive address. [Applause.]

So ordered.

Prof. Chamberlain—I thank you, gentlemen, for such attention as I never saw before to an economic address. [Applause.]

The Chair—As New Jersey is becoming more and more a horticultural State, we have invited Mr. Warren W. Rawson, of Arlington, Mass., to address you on a branch of this subject. I take pleasure in introducing Mr. Rawson to the Board.

Mr. Rawson—Mr. President and gentlemen, I am sorry my address did not precede that of the gentleman who has just closed, for I fear there will be such a contrast you will be disappointed.

Your Secretary, when he invited me for to-day, said he wanted a practical man to address you, and therefore he gave me the invitation. From a practical man you will not expect much of an address, and I would like to do with you as I have done with other similar assemblages where I have made addresses, that is, ask me questions as I go along, and I will try to answer them. That is what I suppose I am here for, although I don't really know. [Laughter.]

My subject is that of "Gardening Under Glass," as it is followed in Massachusetts.

GARDENING UNDER GLASS.

This business is one that has increased to a great extent in the past ten years, and to-day is one of the leading departments of agriculture.

In order to be familiar with the subject the man must have a good education and much experience, because it is too expensive to under-

* Delivered at Freehold March 29th, 1894, and inserted as a part of Monmouth county report.

take unless thoroughly understood. The soil is only a machine into which various articles are placed, and the result depends upon the articles placed there and the care and attention given while going through the various processes necessary for their development into vegetables and fruits, and only those who have had the experience in this particular direction can produce the required result.

It is much easier to produce a crop under glass than in the field, because all the articles and elements are under your control under glass, while in the field they are not, only to a limited extent, but unless well understood, it is safer to trust to the field crops. The articles and elements that you have to deal with or control are these: fertilizers, light, heat, air and moisture. For the first the same conditions exist in the crop under glass and in the field; the second, the light, can be increased by the use of the electric light over the houses in the short days of winter. The heat can be supplied under glass just as required, while in the field it cannot, and much depends upon the temperature at which a crop is grown in the various stages of its growth. This is supplied under glass by means of steam or hot water. The air can be controlled by ventilation in the house, while in the field nothing can control it. The moisture can be applied in either case as required, but in the houses only such amount as required can be applied and at such temperature as required, while in the field it may be applied one day by means of irrigation and the next day it will rain and thereby work an injury to the crop, or it may rain so heavily that much damage may be done.

In the growing of all crops there are certain times that they require moisture, and if supplied will produce a perfect crop, and for this reason, if for no other, it is easier to grow a crop under glass than in the field; that is, if all conditions are thoroughly understood by the grower.

In building greenhouses there are various methods. None, I may say, are failures, but some are better and cheaper than others. The bench system is not favorable to vegetables, but on the solid bed, with walks laid out about 15 inches wide to walk in, the easiest and cheapest houses are built, and about 50 feet wide is the most economical; that is, if the house can be over 200 feet long. For this width a slant on the back of 20 feet from a wall or partition 5 or 6 feet high to a ridge 15 feet high, then a front slant of 33 feet to the front 4 feet high, which is glass with a sill and plate and glass between. The

size of glass to be used is either 16 by 24 or 20 by 30. The larger gives the most light, and there is but little difference in the cost of construction. The larger glass costs the most, but only four-fifths of the lumber is required, and it takes less labor to build with the large glass. For a house of 50 feet wide it will require 12 lines of $1\frac{1}{4}$ -inch iron pipe to heat it with steam, and as many 2-inch pipes to heat it with water. A house that is 200 feet long and 50 feet wide will cost, with boiler for steam, with building and chimney, nearly \$4,000. One 400 feet long and the same width will cost about \$7,000.

I will now mention some of the crops that are grown in green-houses. The largest is lettuce. This is grown to a great extent near Boston and Providence. It is sown continually every week and transplanted first to four inches apart, then when it covers the ground, is again transplanted to eight inches apart, where it remains until ready for market. The headed variety is mostly grown, because it is in demand in most every market, and there are but few growers that can grow headed lettuce; it either runs up to leaves, or gets burnt in the heart, then it is worthless, so that many have given it up and raise such crops as they can grow and have success with. The crop that follows lettuce is cucumbers. These must be grown at a much higher temperature than lettuce, and are therefore grown in the spring and summer months. The cucumber is a tropical plant, and will thrive best at a high temperature, as high as 100 degrees. They are very productive and command good prices when fresh from the vines. Radishes are also grown very largely in houses. The round or turnip variety is mostly used, and they grow best at a low temperature. Rhubarb is also largely grown in houses made for the purpose, and commands good prices in the months of March and April in our market. The turnip beet is grown to some extent, and is a very sure crop, also dandelions, asparagus, parsley, and some cauliflowers. Egg-plants will do well if the market demands them.

In the growing of all these crops under glass much care and attention is necessary. Different crops require different treatment and different degrees of temperature, and it requires a man of experience to run them successfully. Too much heat will injure some crops, while too much cold will injure others. In some cases two or three crops can be grown together in one house, that is, when they require nearly the same degree of temperature. I think that fewer succeed

in growing crops under glass than in the field, and why? Because it requires more skill to grow them under glass, but when it is understood, it is more profitable. In different localities, different crops can be grown to the most profit, that is, the crops that the market demands in that locality. The farther north you go, the longer season for glass; the farther south, the shorter. For Massachusetts, from September 1st to the next July; this only gives two months to get the houses ready for the next season, which is little enough. I have not described in particular any of the crops grown, but will do so if required, but would rather not in my article for publication.

The market-gardener of to-day would not know how to carry on his business without greenhouses, and, in most cases, the more the better. I have sixteen myself, and shall erect three more next season. My smallest is 120 by 22, my largest 400 by 50, but a house 300 feet long by 36 feet wide is a very economical one to build and a very easy size to manage. The first houses, built for vegetables, were built very near the ground, because they thought then that the crop must be near the glass, but to-day the crops do best farther away; some of mine are fifteen feet from the glass. In the first houses benches were used; now no benches at all for growing. They used to put the heat under the benches, but now all is overhead, about four feet from the surface, and the pipes seven to eight feet apart. The house can be easily heated with no pressure on the boiler, if there are sufficient pipes in the house; but in very cold weather from five to ten pounds of pressure on the boiler is sufficient. The boiler in every case must be at the lower end of the house, and all below the surface and below all the return-pipes, so that the condensed steam can return to the boiler warm. In this way very little water is required to be placed in the boiler after it is once put in circulation.

For a house 400 by 50, a forty-horse power boiler is required; for a house 300 by 36, a thirty-horse-power boiler; for one 200 by 36, a twenty-horse-power; but it is always best to have the boiler large enough, because there is always use for steam in cold weather, either to heat your house, your barn, piggery, or to run steam-power. It always comes handy, and you will see that the business of market-gardening has gone on from the ox-team of the past to the green-houses and steam-plants and steam-plows of to-day.

There is one element in connection with this business that I have not mentioned. That is labor. It is the most expensive of all. In

gardening under glass, you require competent men, and the only way to get them is to engage them all the year; then the man will take an interest in your business and do good work, and will be worth good wages. A man is worth not what he can get, but what he will produce. One may not be worth over \$30 per month, while another is worth \$50 and some \$100, but it all depends upon the care they take and, as I have said before, what they will produce. Some men will destroy more in five minutes than they can earn in a whole day. It is, as it is in all other kinds of business, brains and capital. Everything else comes easy, but the first you must have in order to use the others to a profit.

Mr. Cook—I understand you use the electric light for growing vegetables?

Mr. Rawson—Yes, sir; I now have six 2,000-candle-power arc lamps running every night.

Mr. Cook—What is the result?

Mr. Rawson—It has this effect: it increases the growth to the extent of 15 per cent., and we can mature a crop 15 per cent. quicker with the electric light than without it. Some of you might think it would not pay, but when I tell you it costs \$50 a day to run the houses, if I can save one week out of seven weeks, you can see what it is worth.

Mr. McPherson—How big is the house?

Mr. Rawson—It is 52x400, the largest in this or any other country. It has 20,800 square feet of glass.

Mr. McPherson—What crop are you figuring on?

Mr. Rawson—I am figuring on lettuce at \$1, as that is the price we are receiving for it now. The lights are not only over this house, but over three others.

Mr. McPherson—How far above the glass?

Mr. Rawson—About 30 feet. They are suspended over the four houses so the light can shine into all at one time. The lights are only run until one o'clock.

Mr. McPherson—What other crops do you raise?

Mr. Rawson—I grow lettuce, followed by cucumbers.

Mr. Clifford—What is the best size of house?

Mr. Rawson—The 50-foot-wide house is the most economical for space, for you can grow more crops in proportion than in a 36-foot house.

Mr. McPherson—What is the heat used?

Mr. Rawson—With steam. My houses are 16 feet high to the ridge pole, and they face the south.

Mr. McPherson—Is not hot water preferable to steam for heating your houses? Can you not leave the hot water longer without attention?

Mr. Rawson—That would not make any difference, as both would have to be attended to anyhow. If you want to shut off the heat with steam it is only necessary to shut it off at the boiler, and that will lower the temperature.

Mr. McPherson—But you can do the same with hot water, or you can open the ventilators. The advantage of hot water is that it won't require a man to look after it.

Mr. Rawson—That would not answer for lettuce, or you would lose your crop. As to the attention, we have to keep a man anyhow to look after the houses at night.

I saw Peter Henderson's man recently, and he said he wished they could throw out the hot water entirely and put in steam.

Mr. McPherson—It costs too much for labor to look after the steam heat, unless you have a large plant.

Mr. Rawson—I have a large plant, and I keep two men to look after the heat and houses.

Mr. McPherson—The small grower has no business in it?

Mr. Rawson—You have answered your own question.

Mr. McPherson—What temperature do you maintain?

Mr. Rawson—From 32° to 40° at night and from 50° to 70° in the day; that is, if running by the sun. The temperature would not be so high if cloudy.

Mr. Cook—Do you use steam throughout for heating?

Mr. Rawson—I formerly used hot water, but I had the hot-water plant taken out and put in steam for all of the houses.

Mr. McPherson—The temperature for cucumbers is higher than for lettuce, I presume?

Mr. Rawson—Yes, sir; from 60° to 70° at night and from 80° to 100° in the daytime. I should not know what to do if I could not run the temperature for lettuce down to 32° sometimes, for I could not get a good quality.

Mr. McPherson—Can you grow the same crop for successive years on the same soil?

Mr. Rawson—Yes, sir. For the cucumber crop it is necessary to change about three inches of the soil in most houses every year. Where I grow plants I do not change the soil.

Mr. Meech—Are you troubled with fungous diseases?

Mr. Rawson—Yes, sir; to a limited extent.

Mr. McPherson—As a preventive, have you tried sub-irrigation in your houses?

Mr. Rawson—I have not. I should not suppose it would be a success.

Professor Chamberlain—It is an experiment in Ohio.

Mr. Rawson—I do not think it would help with the fungus. I drive that off in other ways.

Mr. Baker—There is one species of fungus that strikes the heart of the lettuce, and you can pick the heart right out.

Mr. Rawson—I have never lost a crop yet, for we watch too closely; I use nothing but tobacco for fumigating, and seldom fumigate at all, and we are but slightly troubled.

Mr. McPherson—How late is your last crop of lettuce taken off?

Mr. Rawson—About the first of May.

Mr. McPherson—Can you keep your houses cold enough that late?

Mr. Rawson—We have cold nights in our climate, down to freezing, right along in April.

Mr. McPherson—Lettuce is grown here, too, in April.

Mr. Rawson—I know it is; but you grow more under cold frames than in greenhouses; I am talking now of greenhouses, principally. You can grow under cold frames as late as May and June, if necessary.

Mr. McPherson—What size pipes do you use, and are they above or below the soil?

Mr. Rawson—They are above the soil; about four feet above the plants.

Mr. McPherson—What variety of lettuce is grown in your vicinity?

Mr. Rawson—The Boston Market, principally; there are several varieties grown by different parties. I grow one I originated myself, and others, to whom I have sold the seeds, grow the same variety.

Mr. McPherson—The Boston Market lettuce is too small.

Mr. Rawson—Yes, sir; it is too small, for it sometimes takes nine

dozen, or even more, for a barrel, while the variety I grow takes but six dozen to a barrel.

Mr. McPherson—What size barrel?

Mr. Rawson—A common flour barrel; your cranberry barrel will not hold more than about four dozen. [Laughter.]

Mr. Fitzz—How many crops do you grow in your houses?

Mr. Rawson—I grow one crop of cucumbers, following two crops of lettuce.

Mr. McPherson—Do you have any trouble with your plants drying up?

Mr. Rawson—No, sir; perhaps you grow on benches instead of on the solid ground?

Mr. McPherson—Yes, sir.

Mr. Rawson—No wonder you make the complaint; I seldom have trouble with my plants growing on the ground.

Mr. McPherson—I do not think that will make any difference.

Mr. Rawson—The benches dry out the atmosphere much more than the solid ground; it takes more moisture for raising a crop on benches than on the solid ground.

Mr. McPherson—You say you open your ventilators—with the ventilators open the hot air will rush out and carry the moisture with it, and without the proper quantity of moisture your cucumbers will suffer.

Mr. Rawson—Then produce more moisture.

Mr. McPherson—You can produce it, but you can't keep it there.

Mr. Rawson—Keep on producing it. Keep your men at it.

Mr. McPherson—What do you grow with your cucumbers?

Mr. Rawson—We grow the turnip beet with cucumbers. They will get out of the way before the cucumber vines come on. The Egyptian beet will also transplant very nicely, and will mature about four weeks after being transplanted.

I want to say here, that if you want to raise lettuce, you must have it coming on all the time; have a constant supply of it when you begin. The whole question of gardening under glass is subordinated to the question of making a profit.

Twenty-five or thirty years ago we used to have little difficulty in getting good men for our money, but now they only want to see how they can get two dollars for doing one dollar's worth of work. Then we used to believe in eight hours' work the same as now, but it was

eight hours in the morning and eight hours in the afternoon.
[Laughter.]

Nowadays if the laboring man earns one dollar he wants two, if he can get it.

I have not said very much about insects. In the house you can get rid of them easily, while in the field you cannot. In the sashes they cannot be exterminated so easily as in the houses. I have 3,500 sashes, besides sixteen greenhouses, and I know something about what sashes will do, as well as greenhouses, and I will put my money in greenhouses in the future, and not in sashes. One dollar in greenhouses will produce as much as one dollar in sashes, and the greenhouses are preferable in every way. Then, again, there is more work with the sashes, and the labor being the most expensive item, we must get along with as little of it as possible.

Mr. Collins—Is there any secret about getting egg-plants to set under glass?

Mr. Rawson—No, sir; they set too much last year, and we could not sell them.

Mr. Gillingham—Are your greenhouses built with sash or with muntings?

Mr. Rawson—With muntings; the glass is mostly 20 by 30, but part of my houses are 16 by 24.

Mr. Gillingham—You cannot take the sashes off?

Mr. Rawson—No, sir; they form a solid roof. If you have the sash on hand, it is all right to build a house with them, but you don't get enough light that way.

Mr. McPherson—What kind of cucumbers do you grow?

Mr. Rawson—The White Spine.

Mr. McPherson—Would it not be more profitable to grow some of the other kinds?

Mr. Rawson—If I thought so I would grow them.

Mr. Roberts—Is there any remedy for worms in radishes?

Mr. Rawson—The only remedy I know of is not to grow radishes. You will find these worms once in the land will prevent your growing radishes at all; at least that is my experience. On other lands we are not troubled at all. I know of no remedy except air-slaked lime.

Mr. McPherson—What kind of manure do you use?

Mr. Rawson—I use stable manure, three inches deep, every time I put in a crop.

Mr. Corson—I had trouble on one of my radish patches, and I plowed the crop under and sowed the ground again to radishes, and the crop was free from worms.

Mr. Rawson—The first crop took all the worms. [Laughter.]

Mr. Baker—In reference to these worms in radishes, I expect you are bothered with the onion maggot, or something similar to that. I have found a complete remedy for these onion maggots the last two years. Last year I planted onions after a crop of winter radishes, and I did get the onion maggots then to perfection, for I found as many as twenty to thirty maggots on a single plant when they were only four inches high. I applied 500 to 600 pounds of kainit, and cultivated it in with the wheel-hoe, and I never saw a sign of them after that. There are two crops of these maggots during the season, the first coming during April, when they go into the soil in the cocoon shape; these come out again about the last of May and are ready to go to work, and that is the reason, probably, you did not find them in the second crop of radishes. Kainit will drive them every time.

Mr. Rawson, in this connection, then presented the subject of

IRRIGATION OF MARKET-GARDENS.

There is no one thing in the business of market-gardening that is so important and will show for itself so quickly and will pay for itself so soon, as an irrigating plant. This may seem a broad statement, but I have three plants and would not know how to get along without them. I could not do my business at all as it is now carried on. We have in the whole year nearly one inch of rainfall on an average per week, but there are some weeks that we do not have any. Now, if there was one inch per week given to us by the rainfall, there would be no need of an irrigating plant, but it is not so, and those of us who carry on business expecting the rainfall, if it does not come it must be supplied. This can only be done by irrigation.

If there is sufficient water at your command, it is a very easy matter to establish a plant by setting up a boiler and pump large enough to supply your demand. If you have ten acres to irrigate, a pump that will pump 200 gallons per minute is about the size. This

will supply enough to wet the ten acres in about three days of twelve hours each, or if run twenty-four hours, it will take one and one-half days. I do not recommend a small plant even for a small place. It will take just as much time to wet a small place with a small pump as a large place with a large one and the advantage is in favor of the large pump and large place every time. It costs some more for the large plant, but not so much in comparison to the place. After the pump and boiler are placed, then the piping comes next. Arrange your place to be irrigated so that it can be piped to the highest point, and arrange the crops so that the rows will run on a slant from the highest point. If level it will take more time, but water run in furrows or trenches does the most good, and applied as often as the crop requires it. There is much to learn about irrigation, as well as growing of the crop, and how and when to apply it is the question. I would advise the use of as large pipe as possible, not less than two inches for any of the main ones, but if the pump will supply two hundred gallons per minute a three-inch pipe is necessary, with smaller ones for branches, but to run in furrows a smaller than two inches would not be practical. All plants obtain their moisture through the roots; a very little on the foliage is sufficient, so that by applying the water in furrows or trenches the roots will get the benefit. It is not best, if the weather is dry, to wait too long before you apply. My practice is, that if it does not rain for a week, unless the plants are small and do not require any moisture, to apply moisture before the ground gets too dry. The crop will not suffer if this is done.

Many think that it costs considerable to irrigate, but I do not know of a single instance where there is a plant established that is not used, and I have not seen a year for the past twenty years that I did not use mine for at least two months, between the 1st of May and the 1st of November, and I could not get along without it. Many crops I grow could not be grown on the land I produce them on if I had no irrigating plant. I could not raise lettuce in the summer season, nor celery, nor could I head my early cabbage nor set out celery plants unless it rained, and I do not care what crop you grow, if it is worth growing at all, it will pay to irrigate it. It will not cost over \$10 to irrigate an acre of land and put one inch of water upon it, and what crop do we grow that will not return that amount and much more for the benefit it receives of that one application? It is true that we must

keep it up if the weather holds dry. The time that crops require the most moisture is when they are maturing, so that it will not require many applications to carry them through.

I have said nothing about the cost of an irrigating plant, but one to irrigate ten acres would cost, with pipe, about \$1,000; one for twenty acres, about \$1,500; that is, if the water was handy and no expense to get it. This may seem large to some, but on a place of ten acres, with two or three greenhouses, your own house and horses and wash-shed, there would be no money so well spent, no matter what your place cost, as the amount you put into irrigation. You may think I state it strong, but I owe much of my success (and it has probably been as great as anyone in the business) to my system and use of irrigation. No farm of twenty-five acres I have ever found that has not water enough running over or under it to irrigate it.

Mr. Blish—Where do you get your water-supply for irrigation?

Mr. Rawson—From a driven well; I have a number of them, from thirty-five to seventy feet deep, just according to where I strike the current of water. I put in an irrigating plant a little over twenty years ago, and then my father, and the old men in the neighborhood, and some of the young men, too, thought I was crazy. But I got over it. I expended considerable money in driving wells to get water, and then I found I could locate the current of water very easily with an apple-tree switch. [Laughter.] Some of you may laugh at this idea, but I will bet a thousand dollars I can establish one every time, and I speak from experience. I can go right to it every time.

Mr. Roberts—Can you tell how it is done?

Mr. Rawson—I think it is the result of electricity, for I cannot stand over a current of water in the ground without being affected. I know I can do it, for I have done it time and time again, and can do it again.

Mr. Roberts—Can you tell the depth?

Mr. Rawson—No, sir; I never saw anyone who could.

Mr. Roberts—Some assume they can do so.

Mr. Rawson—I doubt it.

Mr. McPherson—What has the apple-tree switch to do with it?

Mr. Rawson—I would have to take you out and show you. [Laughter.] There is no farm of 25 to 50 acres but what there exists water enough on it to irrigate it. I can back up this state-

ment. All plants require a great deal of moisture, and no vegetable requires less than 80 per cent., and from that to 96 per cent., so you can readily see how necessary it is that a sufficient supply of moisture should be supplied if you would get your crops at the proper time.

Mr. Jessup—Is it not impracticable to irrigate where the land is very steep ?

Mr. Rawson—Yes, sir ; it is difficult.

Mr. Gillingham—How far apart do you have your gutters ?

Mr. Rawson—According to the kind of crop. For a crop of celery we have them five feet apart, giving a supply of water on each side of the plant, and when the water is in we plow a furrow in to the plants.

Mr. Corson—Have you ever tried to irrigate by pipes laid underground ?

Mr. Rawson—No, sir. My land slopes about one foot in 100, and some perhaps one and a half feet to 100, but it is pretty nearly level, so the water will run just about right, and I have no trouble with my present method. I understand the underground system is used by some, but I have had no experience with it. In the West they have irrigating streams like rivers, whence the water is taken and run in trenches all over the fields.

Mr. Reed—Would it not pay to irrigate the land in winter ?

Mr. Rawson—There are no crops growing then.

Mr. Reed—I mean to irrigate preparatory to seeding.

Mr. Rawson—I don't irrigate when there is no crop.

Mr. Reed—But would it not be a benefit ?

Mr. Rawson—I don't see why ; I don't think it would.

Mr. Reed—Would it not bring the land into better condition ?

Mr. Rawson—I don't think it would pay to do it, though it might help the land. There should be something there to absorb the moisture. My land is mostly a sandy soil, and it would run through it.

Mr. Reed—What kind of subsoil have you ?

Mr. Rawson—Sandy.

Mr. Reed—There would be no danger of its running away with a clayey subsoil ?

Mr. Rawson—I think not ; there would not be as much water required.

Mr. Reed—Is the slope of your land regular from one side to the other ?

Mr. Rawson—I have a regular slope, some towards one side and some towards the other. If it slopes in different directions the pipes are always placed on the ridge.

Mr. Jessup—Does the land not get too wet at the lower points?

Mr. Rawson—We don't let it run down fast enough.

Mr. Jessup—Do you provide an outlet for it?

Mr. Rawson—No, sir; we never have. The soil is so sandy it runs through.

Prof. Van Deman—How do you construct your reservoirs? What means have you for holding the water in store?

Mr. Rawson—I have 10 acres under irrigation, and I only have one tank about 35 feet high, into which irrigating water is pumped. The outlet to the tank is left open, and then you can turn the water off anywhere without bursting any pipes. I have several tanks which I use for various purposes, but it is not necessary to have any tanks for storage of water for irrigation.

Mr. Jessup—How do you get the water from the main pipes?

Mr. Rawson—You can take a hose, or you can have holes in the pipes for every furrow. Where the furrows are about 10 feet apart we have a faucet for each furrow, and open them as wanted. We fill the furrows and then shut off the water at the faucet.

Mr. Reed—What size boiler have you?

Mr. Rawson—15 to 20 horse-power.

Mr. Jessup—Whose make of pump?

Mr. Rawson—There are lots of good makes of pumps. The Worthington is one of the good makes.

Mr. Wood—How large a suction pipe have you?

Mr. Rawson—Four inches.

Mr. Wood—How far below the surface do you drive the pipes?

Mr. Rawson—About three feet below the surface of the water, so the limber-holes are all covered.

Mr. Collins—Will that furnish you 200 gallons a minute?

Mr. Rawson—Yes, sir; more, too, if you want it.

Mr. Wood—We have lots of small streams around here.

Mr. Rawson—You can dam these up if you want to, and pump the water where you like. I have a portable engine and boiler I can move wherever I like and set it up, and this would be a convenient thing for you.

Mr. Goble—Would it not be better to irrigate underneath the surface?

Mr. Rawson—If I could irrigate on top I would not irrigate underneath the surface. It takes much more water to irrigate underneath. You will have no trouble to irrigate your soils on top if your slope is not over two feet to 100.

Mr. Wood—Sub-irrigation would do away with the danger of scalding?

Mr. Rawson—Yes, if your ground does that way. Our ground does not cake or scald.

The Secretary—The Executive Committee felt that this was a most important question for New Jersey farmers, lying as we do between two great cities, and admirably adapted to market-gardening.

We have, in Mr. Rawson, the best authority and largest experience in the eastern United States, and it is possible we may get some profit out of his remarks in the near future. In Connecticut he prepared for a half-hour address but they kept him on the floor for three hours, and we hope we can get as much information from him as the Yankees did.

Mr. Reed—How deep do you run the water down these furrows?

Mr. Rawson—So it fills the furrows nearly full.

Mr. Reed—On the ridge?

Mr. Rawson—No, not in that way; we don't apply more than an inch of water at a time. We want to run it under the roots, and we don't cover the ground all over.

Mr. Reed—Does the water wash a course for itself?

Mr. Rawson—No; we do not run in water enough for that.

Mr. Reed—How long a furrow do you make?

Mr. Rawson—About 300 feet if the fall is not over one foot in 100. That is about as long as practicable. If the decline is more I would not make the furrow so long.

Mr. Reed—Do I understand there will be an inch of water all over the furrow?

Mr. Rawson—Yes, that is about it; this will last from a week to ten days.

Mr. Jessup—If the slope is greater than your land how would you manage to keep the water from running away at the lower end?

Mr. Rawson—You can bank up every few feet and hold it, if necessary. That is the best way.

Mr. Jessup—Allow it to stand in this way?

Mr. Rawson—Yes, sir; or you can run the furrows diagonally.

Mr. Van Deman—With the permission of Mr. Rawson I should like to make a statement with regard to a certain case of irrigation I know about in Kansas.

The Chair—It affords me pleasure to introduce Prof. Van Deman, of Virginia, and we will be glad to hear from him.

Prof. Van Deman—There may be a number of persons here who would like to try irrigation, but think they cannot afford to do it, but the fact is that scarcely anyone can afford not to do it. After spending about eighteen years of practical life on the farms of Kansas I know something of the troubles of the farmers of that State. Your fruit-growers here are fortunate in having the all-important humidity necessary to the successful growing of fruits and vegetables, while the Kansas farmer has not the same advantages. Mr. B. F. Smith, a gentleman farming in Kansas, possibly known to some of you here, is a grower of small fruits, and grows the strawberry quite extensively. He had a patch of two and one quarter acres of strawberries, and he determined to try the experiment of irrigating them. There is a main of the city water works not far from his place, and he made arrangement with the authorities, at 15 cents per thousand gallons, to use the water from this main. His strawberry crop was beginning to suffer from drouth, and he determined to try and save them. On the 17th day of May he got the water to his place and got it to working. He had already made two small pickings of berries from this patch, and he says that, comparing other patches with the patch he irrigated, he would have had but a very small crop. In his haste to get the water in he run the pipes in the runways. He used a three-quarter pipe, which is smaller than Mr. Rawson recommends, and which is too small. He made the experiment as a cost of \$60 for pipes and hose, and the water cost him \$5 and some cents, and the labor cost him something less than \$5, so that the total cost of the plant and application was about \$70 on the two and one-quarter acres he treated. He made two applications of the water, one of 10,000 gallons and one of 15,000 gallons, with an interval of ten days between the applications. Judging from the picking of the other patches, he got over and above what he would have picked \$365. Now, deducting \$70 as the cost of the experiment, you find what he made as clear profit on the transaction. Even this little experiment

made it pay. He is now preparing to irrigate twenty-five acres, and he says there is money in it. There is money in it for him and for you. Why don't you try it? Many of you can, with small outlay, not exceeding \$1,000 for ten acres. I am pleased to find that my estimate of the cost of an irrigating plant for ten acres has proven correct, and I will venture to assert you can clear in two years' time the entire cost of the plant. Possibly it might be cleared even in one year and have money in pocket besides, and when we get horticulture in New Jersey in anything like a proper condition there will not be a first class market-garden or fruit-farm which does not have its irrigation plant.

Mr. Rawson—I never saw one that did not pay for itself in a year, whether the cost was \$65 or \$500 or \$2,000. I have laid out lots of irrigation plants, and got \$50 for doing it, and they all said it paid them.

Prof. Van Deman—It is water we want, and will have. Fix it up in neat packages and the people will buy it, and they will pay more for skim milk than for cream. Look it all over and you will see it is the men who sell water who are going ahead; they make the money, and the man who sells wheat at a cent a pound is not in the race with him. [Laughter.]

Mr. Baker—Too much water is just as bad as not enough. The trouble in the lower section of this State was that farmers had to pick their strawberries with gum boots on. [Laughter.] They want some remedy for that.

Prof. Van Deman—Any man who picks strawberries with gum boots on needs some underdraining in his head as well as in his ground. [Laughter.]

Mr. Baker—We will bring this matter before the Board and give you an opportunity of exercising your judgment, and see what you can do. The ground has no fall, and the water cannot be gotten rid of.

Prof. Van Deman—Move higher.

Mr. Conrow—What crops have you?

Mr. Baker—Several reports were made of picks of 10,000 quarts to the acre, and the crop was very fine. Commission men came down and paid 8 cents at the farm, while there were thousands who only got 5 cents, and had to pay the freight out of that. That section of country produces the finest berries in the United States. I do not

live in that vicinity, but they have the finest soil for berries, if properly drained, of any soil in the Union. It is a deep alluvial soil, and naturally mucky, but the water is so near the surface that, in wet times, they are drowned out.

A Member—The Professor speaks of selling water; is it the proper thing to water our milk? I want to know how to do it. I am in the business, and would like to know how to water milk, and sell it and get my money. [Laughter.]

Prof. Van Deman—Perhaps my idea is not clear. When I say the man who sells milk for more than cream—the man who raises corn and wheat and sells them for one cent a pound, is selling the cream off his land, while the man who sells strawberries gets more than a cent a pound every time. He is selling skim milk, and getting more for it than the man who sells corn. He is selling water, instead of selling potash and phosphoric acid, the very cream of manures. [Applause.]

Mr. Jessup—Is it not true that fruits grown by irrigation are not as good as those grown without irrigation?

Prof. Van Deman—It is true, in a certain sense. I have traveled over California, and have eaten their fruits. Much of the fruit of California, raised in their irrigated sections, is not as good as some others, but this is not necessarily caused by irrigating. Sometimes it is caused by over-irrigating. Many of the growers undertake to do, with water, the whole thing, instead of doing a large part with the cultivator. The ground should not be filled soaking full; make it moist and then, by cultivation, keep it moist and keep the water in the ground. There should be a stratum of pulverized soil on top, and then you will not need so much irrigation. I once heard a gentleman in western New York say in a dry season he hoped it would not rain, for it would spoil his raspberries. He had cultivated his patch to such perfection that the top of the ground was just a dry stratum of dust for a depth of two or three inches. Right in this line, there is near Littleton, Colorado, an orchard of apples, pears and plums, and a few cherries. This orchard is standing right alongside what is known as the "Great American Desert." Just outside the line of that orchard there is nothing but a barren desert, with now and then a little bunch of grass three or four inches high. On this orchard there has never been any water applied by irrigation, except when the trees were planted, and until they were four years old. Just

outside the desert the ground was so barren that 25 acres would not have supported a cow a week. Many of these trees made a growth of from two to five feet in a year, and the trees were in bearing. I took a stick and dug down to find out the reason for the condition of the trees in such land, and at a depth of three or four inches I dug up moist dirt. That orchard had never been cultivated less than once a week all through the summer season, and this kept the moisture. And yet they have but five or six inches of annual rainfall, while here you have about 45 inches on an average. You need not grumble if you will attend to your business properly.

Prof. Chamberlain—I want to make a statement, and ask for some information. I have two ponds, aggregating about an acre, and averaging 30 inches deep. With this water I could cover 30 acres one inch deep, or two inches deep on 15 acres. There are about 10 acres I could irrigate, and I have plenty of fall, probably 30 feet at the lowest part. I have not the least doubt that it would pay to irrigate strawberries by laying pipes and carrying this water to them, but I don't want to raise those crops. I want to sow wheat, to grow clover, to grow potatoes, to get money. [Laughter.] The question is whether it would pay to use that water to irrigate my potatoes, and possibly the clover and timothy also. I am asking for information.

Mr. Rawson—I should say it would, even if it costs \$500 to pump it there.

Prof. Chamberlain—I don't need any pump. It will run there without pumping.

Mr. Rawson—Well, it would pay even if you had to buy a pump.

Prof. Chamberlain—I doubt if it would pay with those crops.

Mr. Rawson—I never saw a crop grown that would not pay for irrigation.

Mr. McPherson—Where are these farms situated?

Prof. Chamberlain—In Hudson, Ohio.

Mr. McPherson—Those lands are usually pretty regular, are they not?

Prof. Chamberlain—I have had as high as 250 bushels to the acre, and as low as 120 and 130.

Mr. McPherson—I don't think it would pay to irrigate wheat; it is big enough. I doubt if clover would pay, either, and the only question is whether the potatoes will pay.

Mr. Rawson—It will double the crop of potatoes.

Mr. Meech—The best way to get water is with the cultivator, and that is the best way to keep it. Cultivate regularly, and keep it up; it will pay every time.

Mr. Wood—How long would you continue to cultivate corn?

Mr. Meech—I would cultivate it until the ears were in process of filling.

Mr. McPherson—This old question of irrigation is very much talked of, but if you irrigate and then have plenty of rain you are in a bad fix. There are hundreds of farms that get too much rain. What can you do with them?

A Member—In the earlier history of our country we find it recorded that one of the inducements used to bring immigrants to New Jersey was the excellent quality of her cider—the best in the country. In the West, where they irrigate, their apples will not make good cider, and I am frequently asked to send my friends a barrel of cider. They say their apple are not good for cider.

Mr. Wood—Have you ever had a heavy rain following irrigation injure your crops?

Mr. Rawson—Not to any extent. Our soil is very sandy, and a rain the day following irrigation would not do any harm.

Mr. Wood—How would it work on a heavy, clayey soil?

Mr. Rawson—It would certainly work an injury. We should only irrigate where we are obliged to; this would not require as much water as a sandy soil.

Mr. Wood—It seems to me this matter should be used with judgment. When your crops are drying up you should irrigate them, and if heavy rains should follow you can be no worse off than if the drouth had killed them. If you irrigate you take the chances of rain following, but you may also save your crop.

The Secretary—Good judgment is needful in the use of anything, in all branches of farm work.

On motion, a vote of thanks was tendered Mr. Rawson for his able and instructive papers.

The Chair—We have with us this evening Prof. L. H. Bailey, of Cornell University, New York, who will present another phase of the horticultural subject. It affords me great pleasure to introduce Professor Bailey to the Board.

Professor Bailey—Mr. President and gentlemen, I come to you to-night with a severe cold, and therefore ask your indulgence for what I may lack in vigor of speech.

SOME OF THE BEARINGS OF THE EVOLUTION-TEACHING
UPON PLANT CULTIVATION.

This century will be known in history as an epoch in which the race came to a turning point in its habit of contemplating the origin and destiny of itself and of the material universe. The dominant philosophies had taught, with more or less steadfastness, that man is in kind wholly and eternally distinct from organic nature, that nature, therefore, possesses only an incidental or extrinsic interest to the race, and that the origin of organic forms is beyond the domain, or at least outside the concern, of the human intellect. With little knowledge of the external world and little incentive to inquire into it, men were content to ascribe the origin of a given object to a summary creation which was without distinct occasion or purpose. The result of this habit of thought was to depreciate the importance of remote events and to detach the present generation, so far as its organic constitution was concerned, from preceding generations and even, also, from the effects of its environments. Phenomena were not studied with reference to their antecedents. Man, standing apart from nature, devoted his speculative philosophy to himself and thereby arrived at those metaphysical absurdities which are now amongst the curiosities of history. There had appeared at various times, however, revolts against this general body of opinion, and, upon more than one occasion, men had come to believe more or less dimly in some kind of a progressive movement in which both nature and man were in some way concerned. This belief was even outlined by the Greeks. The doctrine of the special or particular creation of the forms of life had been held with fierce tenacity in later times, and had become embodied in the forms of religious thought. Yet, at the opening of our century, there had accumulated a considerable body of belief in the spontaneous or natural origin of forms of life, and consequently in the present rejuvenescence or progressive tendency in nature. This movement has matured in our own time, and it has come to be known as Evolution. I have said this much by way of introduction for the purpose of emphasizing two facts—that this habit of thought, which is now well-nigh universal, is of itself a gradual evolution from the centuries, and that to hold this belief does not necessarily imply assent to any particular dogma either of religion or science.

I have said that there was belief in Evolution at the opening of the century. It was mostly confined to naturalists, especially to those under French influence. Amongst those who most clearly perceived it were gardeners or garden-authors, who, observing the wonderful transformations of plants under cultivation, were led to consider that whole groups of plants must have had a common origin. Thus Duchesne, in 1766, concluded that all the species of strawberries must have sprung from the ever-bearing strawberry of Europe. Galesio, in 1811, presented an elaborate chart of the development of the orange tribe, "made according to the principles of the new theory of the reproduction of plants;" and at this time Thomas Andrew Knight had made some of his boldest statements, in reality anticipating some of the generalizations of Darwin. I am particular to call attention to this line of facts, because I am convinced that neither in presenting the history of Evolution nor in elucidating contemporaneous discussions have most modern philosophical writers given adequate attention to horticultural literature and practice. The very fact that garden-plants are so modified and mixed that nearly every botanist avoids the systematic study of them, is proof enough that they afford the very materials in which to study the transformation of species.

This great movement or body of thought, originating in contemplation of natural or organic science, has now extended itself to every field of human thought and industry; and every teacher or investigator, even though he opposes the doctrine of the evolution of organic forms, now approaches his subject from the standpoint of its origin and its relation to all cognate questions. The present conditions of nature and, as well, of human institutions, are seen to have been the product of a gradual growth or evolution, and it is apparent that they must continue to change and develop for all time. The conception of the uniformity of the unfolding of this great law of growth in everything of which we have cognizance, has established a new philosophy, of which the core is monism, or the essential oneness of all things. The discussion of Evolution, therefore, should no longer be confined to naturalists, for inasmuch as it concerns every enlightened person, its various theories and applications should be tested, in a candid spirit, by persons in every walk of life. Every enlightened person is in some degree an evolutionist, and every occupation is to some extent affected by the philosophy.

It is not my purpose at this time to enter into any discussion of

the theories of evolution, but rather to specify some of the bolder directions in which they are capable of explaining or modifying the practices of the farmer, more particularly of the horticulturist. Leaving aside the specific inter-relations of evolution and horticulture, and ignoring the technicalities, let us take a broad sweep of the subject and endeavor to discover those chief fundamental elements upon which the inquiring mind can permanently rest. I shall need to say something at the outset, however, of the shape in which these theories have formulated themselves in the minds of naturalists. That there is an evolution or progression of forms, one giving rise to another, is an assumption no longer doubted by biologists, and I shall therefore present no arguments in support of the general hypothesis. In the words of Haeckel, "The whole literature of modern biology, the whole of our present zoology and botany, morphology and physiology, anthropology and psychology, are pervaded and fertilized by the theory of descent." The difficulties in the hypothesis all turn upon the means or agencies which may be conceived to have brought about this evolution. For our purpose we might divide the philosophers of organic evolution into two classes—those who believe that the environment or conditions in which animals and plants live directly modify the organisms from generation to generation, and those who conceive that immediate effects of environment have no permanent effect upon the species, but that all modifications are brought about through a union of the sexes. Amongst the leading philosophers who hold to the direct permanent transforming effect of environment are Lamarck and Darwin, but these writers differ as to the exact method by which this environment operates upon the animal or plant. Lamarck supposes that the environment or circumstances in which the organism lives—as climates, food-supply, struggle for existence, care exercised by man, and the like—cause the organism to acquire new habits or functions to adapt itself to these circumstances. The organism needs to use one part more and another less in the constant changes in the physical conditions in which it lives, and the effects of this change or modification of function become hereditary. It is evident that this adaptation of the organism to the environment is largely an active one on the part of the organism, and that the Lamarckian theory is better adapted to an application to animals than to plants.

Darwin, on the other hand, supposed that the environments or "changed conditions of life" are themselves the cause of variations

or modifications in the organism, and that those forms which are best adapted to these environments tend to live and to perpetuate their kind, and those which are least adapted to the environments tend to disappear. This is the well-known hypothesis of natural selection or survival of the fittest. It is evident that this survival of the fittest is largely a passive one upon the part of the organism, and that the Darwinian theory is better adapted to an application to plants than to animals.

It will be seen from the above outline that both Lamarckism and Darwinism teach that those characters or modifications which are acquired from the direct or indirect effects of environment in the lifetime of the individual may become hereditary.

In recent years, however, it has been strenuously denied that any such incidental or adaptive characters can be hereditary, and that all new forms come as a result of sexual union. This is the hypothesis of Weismann; but inasmuch as Weismann's conception supposes that evolution takes place as a result of natural selection or survival of the fittest amongst the forms so originating, his theory is generally known as Neo-Darwinism, or the new Darwinism. The fundamental concepts of Weismann are too recondite for presentation here, but I have already said enough, I think, to bring the general trend of the three leading hypotheses of evolution before your minds.

The chief points in these hypotheses, it will be noticed, are the means of accounting for the origin of variations, and it is upon this general question that philosophical naturalists are at present most divided. It is plain that there can be no evolution without variations or initial differences between individuals; and here is the first and most important direct lesson which the evolution theories bring to the agriculturist—the importance of individual differences and the means of securing them. You all know that no two plants are alike. Why?

It is not doubted, even by the adherents of Weismann, that environment may cause immediate variation of organisms, but these latter writers declare that such variations are not transmitted, that is, that they are lost with the death of the individual in which they occur. It is only when any variation is a part of the germ or sex elements, according to Weismann's view, that it becomes hereditary. It is no doubt true that the primary reason for the existence of sex in animals and plants is that offspring may be constantly re-invigorated and diversified by the union of two unlike individuals; for if nothing

were to be desired but simple reproduction, the ancestral method of cell division and bud propagation would no doubt have been perpetuated, inasmuch as it is a much more economical method than sex-reproduction. But whilst philosophers accept Weismann's assumption that sex has come about for the purpose of imparting variability to the offspring, the contrary proposition—that all permanent variation is a result of sexual union—is palpably untrue. It is disproved in many ways, but chiefly by the facts that hosts of fungi are permanently asexual and that every branch of a tree is really an individual and is unlike all other branches, the same as any distinct plant is unlike all other plants, a fact familiar to all careful nurserymen, for they know that the value of a fruit tree depends very much upon what part of the original or cion-bearing tree the cion was taken.

These three facts, then, I wish to impress upon you, first, that every plant is unlike every other plant; second, that every branch is unlike every other branch in some character of growth, shape, character of flowers or fruit, or the like; and third, that many of these variations may and do originate because of the conditions in which the plants grow. Here, then, is the fundamental source, so far as the horticulturist is concerned, of the evolution of new varieties, and even of the possibility of cultivating plants at all. The expert cultivator must come to look at every plant and even at every part of it as capable of producing a new form or variety of promise, if once the conditions under which it grows are made to vary in given or ascertained directions, and if he determines the means by which he can "fix" the variations or make them to become permanent, or can even augment or "improve" the initial divergence; and he should know, also, that it is impossible to successfully submit a plant taken from the wild to the conditions of cultivation unless the plant adapts itself to the new conditions by means of variation. In a word, the whole structure of the cultivation of plants and, therefore, of agriculture, is impossible without evolution.

Now, let us endeavor to put ourselves in Nature's place, if such a conception is possible, and to briefly follow an outline of her methods with plants. We shall find that variation is chiefly the result, so far as we can see, of excess of food-supply. The seedsman knows that heavy lands make his seed-crops "break" into non-typical forms, and he therefore prefers, for most plants, a soil not very rich in nitrogen or growth-production. Heavy soils make the dwarf peas "viney,"

and bud-sports of curious leaves and flowers are wont to appear upon over-vigorous shoots. In short, the whole philosophy of the amelioration of plants rests upon excess of food-supply; for what other object has tillage, irrigation, fertilizing of the land, thinning of the plants, pruning, and thinning of the fruit, but to supply more food to the plant or the parts which remain? Darwin has clearly shown that the greater number of the variations in nature come as the result of this general law—the plant which gets the better of its fellows generally does so because it has appropriated the food or air or sunlight for which the others were also contending. Man's cultivation is, fundamentally, the same as Nature's. He has devised means to augment or emphasize the processes, but the ultimate aims of both are to increase the food; and all this increase beyond the mere point of sustaining the plant in the condition in which man found it goes into the production of variation in one form or another—for mere increase in bigness is itself a most important departure from the type, and it is usually the primary result of domestication.

I believe that the second important cause of variation amongst plants is the effects of change of climate. It is known that every different or peculiar climate has its own type of plants, showing that, in some way, there has come to be a modification or adaptation to the environment. The same process of adaptation begins with domesticated plants the moment man takes them to climates differing from that in which he found them. These changes are, chiefly, reduction of stature and shortening of form when the transfer is to shorter, colder seasons; increase in intensity of colors of flowers and fruits, and often of saccharine contents, in the North; the diminution of evaporating surface—of leaves and stems—in dry climates; the shortening or lengthening of habitual periods of growth; the increased or decreased sensitiveness to the progress of the seasons by which plants bloom and expand their leaves relatively earlier in the North and later in the South; the modification of constitution by which plants become hardier or tenderer; the tendency of plants to become annuals or to developing a resting period in regions of severe winters or long dry seasons; and the development of thickened parts, as tubers and bulbs, in regions of long enforced rest.

In short, the theories of evolution teach that the keynote of progression either in untamed nature or in the garden, is adaptation to environment. The selection of varieties to suit one's soil, and cli-

mate and other conditions, is really a fundamental requisite to success in horticulture ; and, if this is true, there must be a constantly-increasing tendency for every locality and every commercial demand to develop a variety of its own. So, instead of coming nearer to the perfect all-around variety in any fruit, we are continually getting farther away from it, for what is perfection for one place may be imperfection, or even failure, for another place. Varieties are not distinct entities, which can be recommended to growers like so many machines or implements, but they are complex combinations of various attributes, so nicely adjusted that every change of conditions is likely to disengage the composition, and often so intangible, in comparison with others, that the nicest description cannot distinguish them.

I must now make an application of these remarks to the testing of varieties by experiment stations, for this is a subject in which every horticulturist is vitally interested. What varieties shall I plant? This and similar questions are always asked of the experimenter, and people seem to think that it is one of the simplest questions to answer. At all events, it is the universal impression that the experiment station officer, of all others, should be able to answer it definitely. He has the facilities and the time for making tests, and it seems, upon the face of it, that he should have exact knowledge of the merits of all novelties. Yet there are so many difficulties and uncertainties pertaining to the so-called testing of varieties that the results often possess nothing of permanent value; and there are certain reasons why the experimenter, if he derives his knowledge wholly from his own tests, is less competent to pronounce upon the merits of novelties than is the grower himself.

What constitutes a test of a variety? Simply this: obtaining exact knowledge as to whether the variety is distinct from others and whether it is useful for certain places or purposes. It would seem to be simple enough to obtain such knowledge as this; and yet it supposes that the experimenter knows all existing varieties—which no one does or can—and that he is equally expert in judging the merits of any and all plants which may be brought to him, from strawberries to chrysanthemums, and from celery to apples. But there are other difficulties, which inhere in the subject itself. To test a variety for any purpose, it is necessary to actually grow it and use it for that purpose. The chief end of most varieties is for the market, but the

experiment station cannot grow varieties for commercial market. One crate or even one shipment does not test the shipping qualities of a variety, for these qualities vary with the season, the weather, the methods of transportation, and with the different pickings of the same variety; and it is therefore impossible to give any adequate test to twenty or thirty or even more varieties of any one fruit, let alone the many kinds of fruits and other products with which the experimenter is supposed to deal. It is said that one can judge from the looks and behavior of a variety if it will be a good shipper, but I must remind my reader that this short-cut method of arriving at conclusions is one reason why so many disappointing varieties are introduced. And besides this, the variety may behave differently, in different seasons, and in every various soil and treatment. The emphatic impression of this fact upon my mind was the only good result which came out of my first test of strawberries. Over forty varieties were grown, and I made the most conscientious attempt not only to make notes upon productiveness and behavior, but to personally eat every kind. I ate across the patch north and south, east and west, backwards and forwards. The results of the whole test were duly published; whereupon a neighbor three miles away said it might all be very well, but the varieties did not behave that way with him!

What the farmer wants to know is the value of the variety upon his place, not upon the experiment station farm, and he is the only person who can find it out. To thoroughly test a variety is to introduce it. When it is once introduced, the general consensus of opinion of men who actually grow it for the purposes for which it is desired, forms the best and the only criterion of its value. Even then, there may be farms, as every horticulturist knows, upon which a variety which is generally condemned may succeed; and the variety is then not a failure. Now, the discovering of this consensus of opinion, and publishing it, is just the work which the experiment station can perform when it desires to spread information of varieties. The standard of actual sales in commercial plantations is the only correct one for market fruits, and this is to be had only from farmers themselves. A series of tabulated reports, from growers who are capable judges of particular fruits, is capable of giving reliable information of varieties. If, in connection with such reports, the experimenter can add his own experience, very much will be gained; and he often has the great advantage of receiving varieties before they are

put upon the general market. And the greater use he makes of the reports of others, the more valuable does his own variety patch become as a means of study and comparison.

But there is another feature to this adaptation of varieties to the conditions in which they are desired to be grown, which I wish to bring to your attention. Thus far, I have spoken of such adaptations as are necessary means of securing good or profitable crops; but if these changes in the plant, by means of which it becomes fitted to every new condition, are constantly taking place, why is not the modification of the conditions of life the readiest means of securing new varieties? This is one of the sources of new plants or varieties, particularly of those which, like the garden vegetables, are propagated by seeds. One variety gradually passes or varies into another one, and the modification is generally so slow that it is wholly unobserved. Many of our garden vegetables have thus grown away from their original types, although they still retain the original name. The Trophy tomato is probably wholly lost to cultivation, the variety now passing under this name being an "improvement" upon the old type in shape and other features. The fact that varieties are constantly changing in the divers localities in which they are grown, renders exact descriptions of them impossible. Who can describe the Astrachan apple so that it shall be always distinguished from its fellows? Observe, if you will, how the same apple varies—tending to be solid-fleshed and fine-grained, with uniform bright coloring, in northern New England and Canada, coarse-grained and splashy-striped on the Plains, and oblong on the Pacific slope. For all practical purposes, the Baldwin is a distinct variety in each great geographical apple region of the country; and if one is to grow it he should secure trees which are propagated from the type which has developed in his own area. We are always thinking that the evolution of cultivated plants takes place by fits and starts, but the better part of it proceeds from the gradual unfolding of one variety into another, the present arising from the past under the invariable impulse of a fundamental law of adaptation. Consider, for a moment, that nearly every species of fruit has its one leading variety—the Baldwin amongst apples, Crawford amongst peaches, Bartlett amongst pears, Concord amongst grapes, Wilson amongst strawberries. These types have sufficient elasticity of constitution to enable them to adapt themselves to many conditions. They are plastic, progressive varieties; and even though

many other varieties have superior merits in quality or other attributes, they cannot displace those of cosmopolitan adaptabilities. There are probably other varieties in each of these classes of fruits which possess equal elasticity, but these leading forms have got the start and are thereby difficult of dislodgment. Taken altogether, the Wilson is evidently still the most popular strawberry in the North. It is strange that, amongst all the new varieties, there are none which are able to supplant it. It is probable, however, that the variety which we now grow as the Wilson is not identical with the original stock. It would be strange if it were so. In hundreds of generations of propagations, many of the variations induced by soil and methods of cultivation are likely to be perpetuated. Careful propagators select young plants from those portions of the plantation which produce what they consider to be the ideal berry, but as no two propagators have the same ideal berry in mind, there must arise a series of divergences in the type. It is certain that there are different strains of Wilson in cultivation, as there are different strains of the Crawford peach; and it is no doubt this very diversity in the variety which adapts it so readily to many soils and uses. I often wonder if the original type of the Wilson, were it to be again introduced, would find so much favor as its modern progeny does. No doubt every decade sees a new type of Wilson strawberry.

So all varieties of cultivated plants are moving onward with unbroken front, filling in the unoccupied places here and there, spreading into new territory by virtue of new characters, some dropping out entirely in the eternal shuffle for place and life. And because we have observed the genealogy and have kept one name for the parent and all its descendants, we have never thought to question the identity of all the generations. The green gage of to-day is not like the green gage of two centuries ago simply because the names are the same. Nature is a congeries of chains, one link giving rise to another under the operation of eternal and invariable law; and when some of the links die and pass away we notice the breaks in our retrospect, and conceive that evolution has been capricious. But the closer we study the laws of organic life the more certain we are that all present forms are the gradual outcomes of uniform and antecedent causes; and I like to think of cultivation and cultivated plants as agent and objects which are similarly expanding through the passing years.

But you want some summary means of producing new varieties.

You want them quickly, and they must be distinct. You turn at once to hybridization. You must remember, however, that hybrid varieties have not been wrought out with the hammer and the anvil of adaptation, but have been cast forthwith from a mould of conventional pattern. Hybridization is rare in nature. She rarely does things by jumps. There is no proof that she ever made a species or a potent form in this way. But she mildly crosses one species with itself, and out of the slightly-variable offspring selects those which are best adapted to the place in which they live, and uses them for the subjects of another congenial cross; and so the family marches on from generation to generation, each step slow but each one sure. If man makes hybrids, he must generally propagate them by buds, or parts other than seeds, to keep them "true," as in the few hybrid grapes, pears, raspberries and blackberries which we have, and in various hybrid ornamental plants; and as a rule these varieties are less adapted to wide ranges of conditions than are those which spring from legitimate sources. Change of seed and crossing between the different stocks are far more important agencies of the evolution of our field crops than hybridization or other forced effects.

Nature, then, gives the variations. Man is ordinarily only a secondary agent in their production. We shall find that in many of those groups of plants in which man has done the most to modify and improve, natural forces have been guiding the human ingenuity, and the operator has fallen unconsciously into the very methods which nature had chosen for the same conditions. We pride ourselves upon the increasing number of varieties of fruits of American origin, and we have noticed how they differ from their foreign parents; but we have not thought that it is the American environments which have been at the bottom of the evolution. Man's greatest power, I had almost said his only one, is selection. He may choose the plant which suits him and propagate it. This has been going on half-unconsciously for centuries, and this gradual evolution is no doubt the cause of the permanence of many of the types or races of cultivated plants. Intelligent selection, having in mind an ideal form, is man's nearest approach to the Creator in his dealings with the organic world. This has been the greatest force in the wonderful up-building of our cultivated flora. "The key," says Darwin, "is man's power of accumulative selection: nature gives successive variations; man adds them up in certain directions useful to him." There is dis-

pute among scientific men as to the adequacy of natural selection—which is the means so successfully imitated by man—as a method of evolution of the organic world. There are, no doubt, other forces at work, and none of the forces operate equally in all groups of organisms. For plants, I am convinced that natural selection is the chief agent of evolution; and for the same reasons I consider human selection to be the one great force in the improvement of cultivated plants. All theories of evolution seem to teach us that the final result of our domestication of plants will come as a result of unobtrusive forces working slowly through the years, not from summary and brilliant creations.

This, then, is the main thought which I wish to bring you: that the theories of evolution explain the possibility of the very existence of cultivation itself; that they discourage all sudden and spasmodic attempts at the amelioration of the vegetable kingdom, and that they impress upon us with overwhelming force the importance of those slow and silent processes of adaptation and selection which have been operating throughout the ages.

Mr. Lewis—I have been deeply impressed with the remarks of the Professor, and there are so many side lines that I think few of us can do anything but think of what he has told us.

I would move a vote of thanks to the Professor for his deeply-interesting address.

Agreed to.

The Secretary—I have grown fruits in common with other farmers, but do not profess to be a horticulturist. The Professor has brought a question to my mind in relation to the advisability of importing our trees from distant points, as has been a common custom; will those trees and varieties do as well as those naturally adapted to a given locality?

Mr. Baker—I think this is a mistake often made with the strawberry, growing a particular kind of berry on such a large area of territory. In Cumberland county, for instance, we have 3,000 acres in strawberries. I think I am safe in saying that 2,500 acres of these are all of one variety, while the conditions of the soil are as diversified as is possible to find in the State of New Jersey. The Professor has shown us that these conditions all have their influence, therefore I think it is policy, from what we have heard, to grow those varieties

which do best on our particular soils, or the majority will be disappointed in their crops. I came to this conclusion long ago. With one variety nearly all mature at about the same season of the year, while if we had different varieties, maturing at different periods of the season, they would not all be subject to the same conditions, and there would be a better chance of securing a crop, and better prices would also be secured. I would like to hear the views of others on this point.

Prof. Van Deman—The remarks of Prof. Bailey and the Secretary's question have called to mind examples of the peculiar susceptibilities of certain varieties of plants to their surroundings as well as to climatic conditions. As an illustration of this we all remember, perhaps—the older fruit growers, at least, will remember—the old Jucunda strawberry. Many of you will be surprised when I say that this same Jucunda strawberry, in the State of Colorado, is their main market berry. It was discarded here about thirty years ago, practically banished. It has found a home, and is well adapted to the soil and conditions of Colorado. So, too, with the Gandy strawberry in Mr. Baker's locality; while it has had many friends, scarcely anyone thinks of putting it out any more, except in that one locality.

Mr. Baker—It is not adapted to the soils of many of the growers, but the people are all growing it, owing to the success of a few.

Prof. Van Deman—There are certain soils on which it does very well, for if it did not they would not grow it.

Mr. Baker—It does not pay in many places at all.

Prof. Chamberlain—Does not that show that the strawberry knows more than the men do? [Laughter.]

Mr. Baker—It wants a deep, mucky soil, and you will find it planted in the sandiest of soils. In the one they can pick 8,000 to 10,000 quarts per acre, and in the other case barely 1,000 quarts, and the berries are totally unlike.

Prof. Chamberlain—There is scarcely anyone who does not believe the environment—the surrounding conditions—has very much to do with the various changes that occur in this plant-growth. Take corn, for instance, with its variation from popcorn on the one hand, to some of the large yellow or white varieties grown so extensively in the Western States. These variations have gone on and on until we have certain fixed types, not absolutely fixed, perhaps, but quite steady in the manner of their growth. Another question brought up

by one of the gentlemen yesterday, in relation to pollination, has called this to my mind. It is known that some varieties come into existence without the aid of crossing or pollination at all. This comes also without the aid of seeds. We have the bud variations of plants. We sometimes see a tree where one branch begins to have a variation in the leaf, where the leaf may be more deeply serrated, perhaps, or a deeper color, and so on and on into infinitude.

Mr. Roberts—I am pleased to note the statements made by the Professor in relation to the best treatment of old orchards, as it corresponds exactly with my own judgment, that if a man has an old orchard the best treatment is to set out a new one.

Mr. Denise—In relation to your statement in regard to the plant-food in the soil, if we have that here in New Jersey it does not seem to respond to cultivation. We don't get the results. It would be a happy state of affairs if we could cultivate so thoroughly as to grow as large a crop without fertilizers as with. The point is this: having all this plant-food in the soil, by what means can we make it available for plant-growth so as to utilize it?

Prof. Bailey—I am not a chemist. We cannot get all the plant-food, nor did I say you could get it all out of the soil, but the more you cultivate the more you can get, but this will also depend upon the character of the soil, too.

Mr. Baker—In my practice I use about a ton of fertilizer to the acre, sown broadcast. We place the bags along through the center of the field for distribution, and where they stand we always get more on the ground, possibly two tons to the acre, and there I always get my best specimens and my finest crops, so that I am inclined to think that even two tons of fertilizer to the acre is not too much.

Prof. Chamberlain—Do you buy nitrogen?

Mr. Baker—I do. I buy nitrogen and nitrate of soda. It is a combination of ammonia in the various forms.

Prof. Bailey—I do not believe we need buy nitrogen for orchards.

Mr. Baker—How about nitrate of soda as applied to the strawberry. Does it make them soft? I am told it does. Would the time of application make any difference? My practice is to make the application early in the spring, when the plant first shows an indication of the leaf. Other growers tell me they apply it at the time of blossoming, but that it has the effect of making the berries soft.

Prof. Bailey—I have seen the experiment tried, but would not like

to give an exact answer. My opinion is this, that it may have a tendency to make a soft and sappy growth in those soils which are not well fertilized. In lands rich in phosphoric acid you get the normal hard berry. I should imagine this was the solution, but am not sure.

Mr. Reed—In growing crimson clover, when it heads, would you allow it to fall down and seed itself from year to year, or plow it under?

Prof. Bailey—I do not like to recommend anything for New Jersey, as I am not familiar with the conditions. In New York we plow it under in the spring. In the case of the grape-growers, many of them allow it to fall and re-seed itself, while others plow it in and sow the whole plantation. In some places it is grown two years in succession, but I do not think I should leave it without plowing and re-seeding.

Mr. Conrow—Is there any danger of putting too much potash or phosphoric acid on an orchard?

Prof. Bailey—I have never seen any bad results from doing so.

Mr. Conrow—How about wood ashes?

Prof. Bailey—For myself I think I would prefer a top-dressing of some other manure. It is now believed that potash is potash, in whatever form it may come, and in any event it goes through certain changes before the plant utilizes it. The question is that of cost. We think, as a rule, that wood ashes are too expensive, as they are too easily leached.

Mr. Roberts—I understand that if too much muriate of potash is applied it becomes locked up. I had a lot that was about as valuable as a fertilizer as ground glass would be. What does that mean?

Prof. Bailey—I don't know. It would depend upon the crops, I think. It undergoes a chemical change, I presume, but what that is I cannot tell you.

Mr. Conrow—I have used sulphate of potash and muriate of potash and Canada ashes, and they seem expensive, but I think I get better results than from potash in any other form.

Prof. Bailey—Then you have good ashes.

Mr. Conrow—They seem to be in more favorable shape than any other form. I have just got a carload within a short time. I believe there is danger in using too much muriate, and believe I killed some of my trees by using it, but I have never had trouble with the ashes.

Mr. Meech—In relation to this off year in fruit crops, do we understand we can get a good crop every year from our orchards if we handle them properly?

Prof. Bailey—I think I said a fair crop could be secured in an off year; that has been our experience. I think you can remedy this very largely by proper cultivation.

SECOND DAY.

EVENING SESSION.

NOTE.—Prof. Bailey's address, with the discussion, is set back in the Minutes so as to follow immediately after the Market Garden and kindred subjects, and the following discussion of the afternoon inserted here with similar proceedings.—SECRETARY.

Mr. Cook then presented the following resolution :

“Resolved, That the New Jersey State Board of Agriculture requests our members of Congress and United States Senators to use their best efforts to secure the passage of the ‘Grout Oleo Bill.’”

Mr. Nicholson—I would like to see that resolution considered without reference to the committee, and I move its adoption.

Mr. Betts—It would be a pity to have this passed without a word from someone. It is amazing that some of the gentlemen in our cities should manifest such zeal for the purity of milk and the health of the cows, and yet take the side of impurity and fraud in the manufacture and sale of an article of this kind. I have been reading the papers for many years, and find that, while there are honorable exceptions, the leading press of our cities has taken the side of the millionaires of Chicago, the manufacturers of a fraudulent article, coming in competition with this great industry upon which nearly half the population of the country are dependent. The suppression of this fraud has already caused months and years of labor, and yet little progress has been made. Is it not time for farmers to learn to think and to act, and to make known their opinions to our Representatives, whom we voted and helped to their seats in Washington? [Applause.] If the farmers of this country will once act intelligently

and unitedly it will not again take five years for Congress to pass a measure of this kind. [Applause.] They say this is a wholesome article, but it is questionable whether they ever ate any of it. They think it good enough for someone else, but whether it is good or not, the farmers ask that it shall be sold for what it is. [Applause.] They ask that it shall not be sold as an article—pure butter—which is one of the principal sources of revenue of many of our farmers. We ask that it shall be sold, if at all, for just what it is, and that it shall be branded what it is. If it were so branded precious few would buy it, and the whole trade would fall. All we need to secure the passage of this law is to act intelligently and unitedly, as other people do when their interests are at stake at Washington. Commercial men have little difficulty in securing the passage of laws furthering their interests, and why need we have to wait five years for the passage of this law? We are not united, and therein lies the trouble.

I hope this resolution will pass and that it will be sent to Washington, and that we shall not forget to write to our members of Congress, and bring every possible influence to bear in support of the measure.

Mr. Burrough—This Board is on record, and has been for years, in favor of this action, and I do not think there will be a dissenting voice. I therefore ask for its immediate consideration.

The resolution as presented was then unanimously adopted.

Mr. Gillingham, for Mr. Taylor, then offered a resolution in relation to licensing farmers for the sale of their own productions in towns and villages, as follows :

“Resolved, That the Legislative Committee of the State Board of Agriculture guard against any amendment to the Borough act that will require farmers to pay a license for the sale of the products of their farms.”

On motion of Mr. Gillingham, the resolution was adopted without reference.

Mr. Denise—I have a bill prepared for that purpose. There was a bill came in last winter, but it did not mention the farmer. I understand farmers were compelled to take out licenses last summer, and some of the cases were contested and found to be unconstitutional. Nevertheless, we will try and guard against it in future.

I have a matter I wish to lay before you. Perhaps many of you know the fight made last winter to prevent the veterinary surgeons from getting their bill through the Legislature. That bill will be presented again, and I think it the duty of every member of this Board and of every farmer in the State to use his influence to prevent the bill becoming a law. Most of our legislators are not farmers, and they do not understand what farmers want, and it is therefore important you should impress this matter upon them. As a general thing, the lawyers seem to carry the Legislature along with them, and I fear we will have hard work in keeping the bill from being passed, although we have more farmers as members of the Legislature than ever before, I think. But give us your help in every possible way.

Mr. Burrough—I fully recognize the importance of the remarks of the President, and I have prepared a series of resolutions, which I have handed to the Secretary.

The Secretary presented the resolutions, as follows :

“ *Resolved*, That we commend the conservative, yet earnest, manner in which the Tuberculosis Commission is enforcing the law under which it is organized.

“ *Resolved*, That the Committee on Legislation of this Board are hereby instructed to discourage and oppose any legislation on this subject unless indorsed by the Tuberculosis Commission.

“ *Resolved*, That the commission be allowed to amend or alter the phraseology of their report before printing, should they desire to do so.”

Mr. Burrough—I move the adoption of the resolutions without reference.

Agreed to.

The Chair—We have some interesting exhibits on the tables before us, and I will name as a committee to report on same Messrs. W. B. Lippincott and Daniel Horner.

Mr. Voorhees offered a resolution in regard to the proposed changes in the new public school law, and also a resolution in regard to the analysis of the soils of the State.

They were both referred to the Committee on Resolutions.

Mr. W. B. Lippincott then made the report of Committee on Fruits and Vegetables on Exhibition, as follows :

Your committee report that they have examined the various specimens of potatoes and fruits and find them a very meritorious exhibit.

Forty-eight varieties of potatoes were exhibited by Theo. Baker and Edward Burrough, among which are several varieties deserving of especial mention. In these are included American Wonder, Gov. Rusk, Mammoth Pearl and Early McMorris. Considering the unfavorable conditions for the development of the potato crop during the year 1894, we think these varieties promise to be valuable acquisitions.

Three prodigious specimens of the potato grown in Colorado by a former resident of New Jersey attracted much attention. The producer is unknown to your committee. We consider our absent friend entitled to meritorious mention.

The one sample of cranberries exhibited by George E. Fell are of remarkable size and of high color; they are superb.

The variety of corn exhibited by ex-President Burrough, having two ears on a stalk, in our opinion possesses merits that entitle it to more than ordinary attention by our farmers.

A jar of quince, containing less than two of the Meech's Prolific, is exhibited and is exceptionally fine.

An excellent specimen of the shell catch of oyster spat is exhibited by Capt. John Burton, of Ocean county; is both curious and instructive.

A metallic horse brush is exhibited by the inventor, Mr. Anderson.

W. B. LIPPINCOTT,
DAN'L W. HORNER.

On motion, the report was adopted and committee discharged, with the thanks of the Board.

Mr. Burrough—The committee has called attention to the corn exhibited here. This was grown from some seed I procured at the World's Fair. An ear of this was given me, and I purchased several bushels for ornamentation at the Fair. I planted two rows across my plot, and this is some of the crop. In September, in making an examination, I was surprised to find how many of these stalks had two ears on them. The rows were not over one hundred yards long, but I found it wonderfully prolific, and I think three-quarters of the stalks had each two ears on them. It seemed rather extraordinary to

me, and I have therefore brought it to your attention, although I do not know the name of it.

Prof. Van Deman—How many stalks to the hill?

Mr. Burrough—In one hill, with three stalks, there were six ears.

The Chair—Mr. Burrough called my attention to the number of stalks bearing two ears each, and I was much surprised to see how prolific it was.

Then adjourned until 9:30 Thursday, January 17th, 1895.

THIRD DAY.

MORNING SESSION.

Mr. Lippincott in the chair.

The Chair—Last evening there was some reference made to the exhibit of corn on the table. It would seem desirable to cultivate this on account of its being so prolific, and Mr. Burrough has kindly offered to distribute what he has to spare on condition that those who plant it shall report the result here at the next meeting of the Board. He also wishes that those getting seed will register with the Secretary, so that the results of the experiment can be recorded for the benefit of agriculture in the State.

Mr. Blish—Do you mean that all the corn raised from this seed shall be brought here?

Mr. Burrough—Simply the results of the crop, with samples.

Mr. Jessup—Will there be conditions imposed? Will it be required to make a separate planting of it?

The Chair—You could not tell much about it unless planted separately, as it would be likely to mix with other corn.

Mr. Burrough—Personally I have no particular object to gain. As I have before stated, I planted this corn last year with surprising results, and I want to give others the same opportunity. What seed I have to spare I will send out through the Secretary of this Board, and I want a statement brought here next year of the results of your experiments, whether good, bad or indifferent. Let us know how it was raised and under what circumstances and conditions; whether it was hill or drill culture, how many stalks to a hill, if hill culture, and everything about it of interest to the Board. We want the

experiment made and the results reported from as many parts of the State as possible.

The Secretary—I mentioned last year that we had some oats from the State of Washington, and I still have some of these for distribution. It is claimed they will produce 80 bushels to the acre. If any of you would like some of this seed I will be glad to furnish it while it lasts, under the same conditions imposed for the corn.

Mr. Baker—Is anyone growing winter oats?

Mr. Black—My brother has four or five acres, and they are looking as well as wheat.

Mr. Baker—I purchased a bushel of seed from Texas, half of which I have sown myself and half I gave to a neighbor. I will report the results at our next meeting. We planted them in October, and they are now looking very well.

Mr. Garrison, for the Committee on Resolutions, reported as follows:

“Resolved, That the New Jersey State Board of Agriculture, in convention assembled, re-affirm their faith in the equity and policy of the extension of home delivery of mails, and respectfully request our official representatives to give due consideration to its claims to official action, and to use their best endeavors to prevent its consignment to a subordinate position in postal legislation.”

The committee report favorably, and recommend its adoption.

On motion to adopt—

Mr. Conrow—I am in favor of this, under certain restrictions, and believe we should have free rural mail delivery, if not too heavy a burden on taxpayers.

Mr. Blish—It occurs to me that a taxpayer living three or four miles away from the post-office is as much entitled to have his mail delivered to him as the merchant or resident of a city, living within a couple of blocks of the post-office. The farmer pays as much tax for this very purpose as anyone else, and under the present arrangement must hook up his horse and drive four or five miles, perhaps, to get his mail, while the mail is brought to the business man many times a day. We hear so much of the great efforts made to educate the farmer. He cannot now get his newspaper without going several miles for it. I think he is more entitled to free delivery of his mail than the man living next door to the post-office, for that man can get his mail himself when it comes in, without the loss of time. The

farmers have been deprived of this privilege long enough, and it is time something was done in the matter.

Mr. Burrough—I have given this matter much attention, and before recommending this so unreservedly I took the time and trouble to go to Washington and confer with the late Postmaster-General, who sought to inaugurate this system. He advised me that, at present, the government furnishes free mail delivery in cities of 10,000 inhabitants, and not less. All other towns and cities and villages are cut out. There is no reason why those towns and cities and villages having 5,000 inhabitants, or even less, should be cut off from this privilege, as the different communities bear the same relations to each other; but how to do this? First, we must get Congress to pass a law bringing this number of inhabitants down to 1,500 as the minimum number entitled to free delivery, and then extend the delivery system from that center. In South Jersey to-day the only free mail delivery south of Trenton is in the city of Camden. Now, we want Burlington and other towns made distributing centers, so that all may be included in the arrangement. At my own home, Merchantville is the nearest post-office, while surrounding it, in various directions, are five other small places, each having its own post-office. These small offices should be abolished, for it would cost less to deliver the mails in these localities than to maintain these small offices. The question has been asked, How can we get stamps and stamped envelopes if these small offices are closed? The government is continually besieged by small shop-keepers and others for the privilege of selling postage stamps, postal cards and envelopes. They receive \$2 per month for this service, and sell the stamps at par. The government also places a letter box in front of these stamp agencies, for the accommodation of those wishing to mail their letters.

The Secretary—There is still another argument in favor of this extension of the free delivery of mails. If you can have such facilities in rural neighborhoods, you will induce people to settle there. Thus you will increase the demand and the price for country homes and small farms.

Mr. Jessup—I think we need not be alarmed about the restrictions on this free delivery referred to by Mr. Conrow, for the government will attend to that when the time comes for us to have it—and it has not come yet.

Mr. Cox—There is one matter I want to bring to your attention.

My friend, Captain Blish, is an example of one knowing the desirability of free mail delivery extension, for he is in a position to judge, having lived both in the city and in the country. He formerly lived in the city, and had his mail brought to him, and as soon as he moved out into the country, although he is the same man and holds the same relation to the general government, he has not the same privileges. The nation is under the same obligations to him, but don't treat him the same in the two instances.

Postmaster-General Wanamaker, who filled the position with credit to the country and himself, has said this thing is entirely practicable, feasible, and, in places where it was tried, it proved to be inexpensive, while in some instances it actually proved a saving of money. Congress, in view of his reports, wished to continue this extension, and appropriated \$10,000 for the purpose, and then, believing it desirable to still further extend the experiment, made an appropriation of \$20,000. Both houses of Congress agreed to make the total appropriation for this purpose \$20,000, but the present Postmaster-General don't want the money, and says we don't need it. We have tried to establish the fact that we do need this, but the Postmaster-General says we don't. He puts himself above the Congress, and above the people, and refuses to spend any of this appropriation in that direction, and even refers in his report to this money as being saved to the nation. Congress again, the following year, made an appropriation of \$20,000, but the Postmaster-General won't use it, and, when application is made to him to know what action has been taken in the matter, politely tells you to wait until his report is made and you will know. Farmers have spoken in favor of this question, but he puts himself above the people, and will do nothing. The farmers want free rural delivery, and are going to have it. [Applause.]

Mr. Collins—There is another point in connection with this. Philadelphia, as a post-office, makes a large profit for the government, and her business people will advocate one-cent postage, on the ground that their post-office pays a profit. Now, they are more entitled to one-cent postage than we are to free delivery, reasoning from their standpoint, and we should urge our requests properly, and without asking too much, else we will be set aside for one-cent postage, which is being so strongly urged by business men.

Mr. Blish—The city of Philadelphia is more than self-sustaining in its post-office, and if the government is running its post-offices the

same as a trust company would run its business, of course they would not send any mail except where it could be sent at a profit, but that is not their position at all. Many of our post routes don't pay to-day, and hence we are taxed for the deficiency. I think the arguments would be very lame if made on that ground. Many of our cities and towns with post-offices don't pay their expenses, and if the postal business were run for the purpose of making a profit we would call them a trust, and think them as bad as the Sugar Trust is said to be.

Mr. Beans—I have some facts bearing on this matter I would like to give you, if I can do so without trespassing too much on the time of the Board. I think the experiments made by Wanamaker have proven the practicability and feasibility of this free rural delivery. He applied the moneys appropriated to 46 post-offices, giving each \$212. The appropriation was made to 46 offices, but two of them abandoned the experiment, because they could not get anyone to make the delivery for the money, but the other 44 offices persisted, and as a result the government received a net profit of \$807 on the transaction. It was a profitable transaction, both for the government and for the citizens. I do not think any government has a right to classify its citizens. It should be a government of the people, for the people and by the people, and such a government shall not perish.

Three years ago there was a movement inaugurated by the business men of Chicago to secure a reduction of postage to one cent. We can readily see what a commercial advantage it would be to them if they could secure a reduction of postage to one cent, enabling them to transmit their goods to buyers. England has her parcel post, and the United States mail would be the parcel post for our business men if the postage were reduced to one cent. It is very likely a movement will be made in concert with each other for the business men to secure this reduction. Members of Congress have already been consulted, and the movement is under way. These are business men, and business methods will be used in securing the passage of such a law. They won't say much about it, but the first thing we know the law will be enacted, and then we will see what effect such a reduction would have on the prospect of the extension of free delivery to the rural districts. The annual receipts from the postal service are now about \$40,000,000, and should this reduction be made it would cut the annual receipts nearly one-half, and the government would then

be very loath to take such a step, because they would not have the money to expend.

It might be well to inaugurate a system something like this: Let the government appropriate say \$100 to such offices as wished to inaugurate the free delivery, and let the balance be made up by private enterprise. Would not this be a step in the right direction, tending to a much wider extension of the free delivery system?

Mr. Conrow—I am an advocate of the extension of free delivery, but we should ask moderately, and then we may gradually get something, whereas if we ask too much they will give us nothing.

The question then being on the adoption of the resolution it was unanimously agreed to.

Mr. Garrison—The resolution in relation to taxation and salaries of officials we report upon favorably.

“*Resolved*, That the Legislative Committee of this Board be instructed to use its influence with the present Legislature for the reduction of the burden of taxation, by the reduction of all excessive salaries and the abolition of useless offices.”

On motion, the report of the committee was concurred in.

Mr. Garrison—The Temporary Committee on Legislation reports as follows:

“We have carefully considered all resolutions referred to us, and recommend the adoption of No. 1, asking for rural delivery of the United States mails; also of No. 2, relative to the reduction of the burden of taxation.

“Inasmuch as the new School law of 1894 has had but half a year of trial, and that the matter is already before the Legislature, we recommend that No. 3 be laid on the table.

“The following resolutions we recommend be not passed:

“*WHEREAS*, The disease known as foul brood appeared in many apiaries in our county the three seasons just passed; *and whereas*, many owners take no measures to cure or prevent its spread; *and whereas*, it has totally destroyed many apiaries in our county, causing losses of thousands of dollars to the owners, and bids fair, if not checked, to exterminate the honey-bee from our county, if not from the State, to the detriment of both the owners and horticulturists; therefore, be it

“*Resolved* (by the Hunterdon County Board of Agriculture), That

we urge a stringent law for the eradication of the disease, as is the case with other contagious diseases of farm stock, and as is the case in other States of our Union ; and be it further

“ *Resolved*, That we hereby request the State Board of Agriculture to investigate said disease, and to take such measures for its eradication as may be deemed advisable.’ ”

On motion to concur in the report of the committee—

The Secretary—I have had an interview with the Secretary of the Hunterdon County Board on this subject, and he says it is possible for one diseased brood to spread the disease and destroy whole colonies of bees. It is the growing menace of the bee-keeping industry, but how to cover it with a law is uncertain. We are trying to compel the spraying of trees, and this is about in the same line.

Mr. Cushman—As a bee-keeper from another State, I am very much interested in this question, and think it a very important matter, and one on which the State Board should take some action. If you can do nothing, who can? I believe this Board could appoint a bee-keeper who is also a physician, and give him a certain amount of authority to look up these cases of foul brood. In Canada they have a commissioner for this purpose, and had it not been for this the whole bee industry there would have been destroyed, and similar action here would not cost much. I hope something will be done.

Mr. Rogers—The time to take all these up is while they are in the bud, and if you can do nothing to stop the spread of this disease, then I say let us wipe out all laws in regard to contagious diseases. An ounce of prevention is worth a pound of cure all the time.

The Secretary—Mr. Cushman recommends the appointment of a physician who is a bee-keeper to look into this matter. The law which constitutes the State Board of Agriculture gives its Executive Committee the power to investigate such matters, and if this were referred to the Executive Committee under the last resolution in the series they could take such action as seems most advantageous.

On motion of Mr. Blish, the report of the committee was amended, referring the resolution to the Executive Committee, when the motion as amended was agreed to.

Mr. Garrison—Your committee report favorably on the following resolution and recommend its adoption :

“ WHEREAS, The rates charged by the railroads of this State for hauling peaches, small fruits and other farm products to market

appear to be high and not in proportion to what the fruit sells for in market; therefore, be it

Resolved, That this State Board of Agriculture respectfully requests the Senate and General Assembly of the State of New Jersey to enact a law requiring the railroad companies of said State to transport these products at a reduction of rates more equitable than those at present in force."

On motion, the report of the committee was concurred in and the resolution unanimously adopted and referred to the Permanent Committee on Legislation.

Mr. Dickinson, for the Committee on Credentials, reported their work completed, a list of Directors present and entitled to payment of expenses having been furnished the Treasurer.

The report was received and the committee discharged, with the thanks of the Board.

The Chair—We will now hear from Mr. John H. Denise, of Freehold, who will give us his experience and views on growing grass and making hay.

THE A, B, C OF GRASS CULTURE.

BY JOHN H. DENISE.

It is my purpose in the presentation of this paper to throw out some suggestions that can be made operative in the better care and greater production of the grasses of our State, both for pasturage and hay.

Within the scope of this subject will be considered a few of the clover species. In the preparatory course on the part of the husbandman there are three cardinal principles involved, namely, fertilization, soil preparation, and sufficient seed-sowing of varieties adapted to the soil and circumstances of your personal dealing.

We have a variety of soils, and equally so of the grasses whereby nearly every foot of soil within our borders may be clothed with its growth.

Professional life necessitates time and means in preparation for business. So agriculture, the subject of which we are treating, occupies the closest relation to man, requiring time, study and close observation, as we deal more directly with the laws of nature.

As the grasses are a very important factor in piecing out the short-

ages that may accrue from little abuses of the soil-tiller, it is important that we court the growth of nature's assistant. Take the South, where formerly grass culture received little attention, in fact was under the ban of rural public opinion; at a later day, farmers realized that their system of farming was not only soil-exhaustive, but was a suicidal business practice.

A thoroughly-clean seed bed is important. If seeding in connection with winter grain is to be made, we fine our soil to a depth of about three inches, regardless of how compact it may be below this. Follow the grain drill with a light smoothing harrow; we now have a smooth surface upon which to distribute the seed, and instead of having all our grass in the drill tracks, the general surface will be better occupied. Sow about six quarts of timothy after grain-sowing, and always upon a freshly-stirred surface. In February or March, sow about four quarts red and one of alsike clover—if possible, when surface is a little honeycombed from freezing. If soil is of a sandy character, delay sowing for a little and harrow before putting on the seed, and then roll. If there is not sufficient timothy, add a little to the spring sowing. The grain is frequently benefited by the harrowing and but little of the growing timothy will be lost; if failing to get a good catch, some time in August—a damp spell is preferable—scarify the surface with a disc harrow, and re-sow with a mixed seeding of the usual quantity, and harrow sufficiently to cover the seed. I have had good results from three trials of this character. Do not fertilize the grain too heavily with nitrogenous manures; straw will lodge and smother the grass. Bone and potash make a stiff straw and furnish the proper plant-foods for the coming clover crop. With the application of 1,500 pounds of high-grade chemical goods per acre for potatoes, there will be sufficient plant-food for a grain crop and one grass harvest. After the grain is gathered, mow the stubble and let it remain on the ground. Do not allow a too heavy math of grass when it goes into winter quarters, as mice will be harbored and eat the crown of the clover plant. On the other hand, too close cropping is penny-wise and pound-foolish.

Allowing we have a good stand of grass, we should gather from two to three tons of hay per acre the following harvest. If drouth shortens the first cutting and we have a good second growth, harvest this, but do not cut too late nor shave too close. To insure a heavy growth for second year's mowing, after grass has started a little in the

spring, dress with 150 pounds per acre of a high-grade ammoniated chemical composition. If we have sufficient moisture, we can count on about three tons per acre for second year's mowing. I have harvested nearly four tons. For third year's mowing, apply ten loads stable manure and 200 pounds of a chemical mixture; results should be from two to three tons per acre. Yard manures have a tendency to thicken the growth, while the chemicals stimulate the timothy. For the fourth and successive years, dress with 400 pounds of a home-mixed fertilizer of the following composition: 1,000 pounds of nitrate of soda, 400 pounds of ground bone, 400 pounds acid phosphate, and 200 pounds of muriate potash. From the aforesaid treatment we have harvested paying crops of grass for eight successive years. Nitrate soda alone forces an early, tender growth, with a liability to lodgment at a time injurious to quality. It is proven conclusively that the three necessary elements of plant-food in different proportions for special crops and soils give the best results. After years of mowing, red-top will spontaneously take possession of the land, thus reducing the quality of hay and necessitating a plow-up.

Allowing an average yield of two and a half tons per acre for a four-year series, we have—

Ten tons of hay, at \$14 per ton.....	\$140 00
Four years' pasture, at \$2.50 per acre.....	10 00
	<u>150 00</u>
Expenses of seeding, per acre	\$2 00
Interest on land, four years, at \$6.....	24 00
One-third of gross sales for harvesting and selling.....	46 00
Three years' fertilization, at \$11 per year.....	33 00
	<u>105 00</u>
Net gain.....	\$45 00

or \$9 per year per acre.

We also claim that this treatment leaves the soil in better condition for a cultivated crop than when we began the mowing. It is a recognized fact that there are many cultivated acres that do not yield a margin for profit. Expensive labor with our competitive condition forces us to less tillage area, and to use the same amount of manure for the few that was given to the many acres; in other words, there is no profit in the cultivation of more acres than we can properly enrich for the production of maximum crops. Atmospheric agencies being normal, query: What are we to do with our lands? Grass

comes to the rescue and offers us the needed panacea for the correction of this suicidal practice of too much tillage. If not suitable for mowing, keep more land in pasture. Fertilize liberally and the meat stock can be trebled, milk cans will be multiplied, manure pile will be enriched and doubled in quantity, leaving an extra store of plant-food supplies on the farm. It will be necessary to supply phosphates and potash in some measure to maintain the productiveness of these pasture lands. Grazing lands soon become overrun with weeds if the grasses are not supported by proper feeding, and through their seeding we have such to contend with in the tillage crops. Pasture lands when suitable for tillage are among the best for cultivated crops, as proven by practice, and the scientist tells us they are continually storing plant-food for the future crops. Possessing these advantages, they will, under tillage, double their product, and a new era will dawn upon the farmer making grass the basis of his operations.

For hay, timothy takes precedence for all clayey soils. It being a bulbous plant, with its feeding roots near the surface, it will not properly develop on a sandy soil, as it fails, through dryness of surface, to form the bulb that is necessary to sustain its longevity. It will also be short lived in an impoverished soil; this plant needs close contact with proper food, as its root extension is limited, and oftentimes, through lack of moisture, the period of growth is short. It will soon succumb to the natural grasses, unless the growth is stimulated by fertilization.

Other favorites among the cultivated grasses are red top, orchard grass, herd grass and the clovers, each filling its place in a well-rounded scheme savoring of success.

Orchard grass thrives best in shady places. It will, however, do nicely when well set in any soil, as it is a gross feeder and rooting deeply. If cut for hay, it should be gathered before too ripe, and for pasture, cropped closely. Thick seeding is necessary—about two bushels per acre. The red top and herd will flourish in lands that are too wet for the clovers and upon peaty soils. Seeding to grass alone is becoming quite popular in our State, and answers well if land is positively free from foreign matter. Have your soil in proper condition as to fineness, and free from weeds. With requisite fertilization and a heavy seeding with the following mixture it should give good results: Six quarts of timothy, four of red clover, one of alsike, and one-half of crimson, if for hay; and for permanent pasture, add a

little white clover and blue grass. Careful distribution of seed is necessary, as every inch of space should be covered. Roll well after seed-sowing.

If clovers winter-kill, re-sow in the spring. As timothy alone will give a poor yield, needing one year's growth to reach its best, clover not only adds to production, but subsequent crops delight to follow in its tread.

Clover hay being rich in expensive plant-foods, we can profitably give a portion of this crop in connection with the coarse feeds to our farm stock, especially for milk, notwithstanding the low price of animal products. Clover is a strong link in the chain of crop rotation. While it requires a larger per cent. of the expensive element of plant-food, nitrogen, for its development, it is very pronounced from practical results that it leaves more of this particular substance in the soil than other farm crops; hence the growing of clover with the cheaper plant-foods, phosphates and potash, would seem a rational process. While it takes nitrogen in its growth, direct application of such to the plant will generally kill it. Clover having the capacity to feed upon the nitrogen of the atmosphere, and also of fishing in the subsoil, is one of nature's best gifts to the husbandman. Crop results following a clover growth confirm this statement. Young clover must not be cropped too closely.

CRIMSON CLOVER.

Although a comparatively new plant, and we have much to learn in regard to its adaptability as a help in our industry, I believe it a valuable acquisition to agriculture. It can be grown in all parts of our State, needing to be well established before frost in the northern portion. Its use as a catch crop where high farming is practiced should be adopted, as it supplies a long-felt want to this system of the soil-tiller. It carpets the surface, making a protection against the winter winds; makes the soil in a friable condition when plowed, and adds nitrogen to the store of plant-food for the following crop. It makes an early spring pasturage or soiling crop. Always sow on a freshly-stirred surface and harrow lightly. About eight quarts seed per acre. Foreign seed is apt to be mixed with English turnip. If one has facilities for hulling, the seed crop, under the present demand,

would be profitable. For orcharding, crimson clover is surprisingly helpful, especially among young trees. Apply bone and potash and the clover will furnish nitrogen.

HARVESTING.

Among the many introductions of advanced agricultural machinery none are more conspicuous than haying tools. The substitution of horse-power for muscle lightens the labor of hay-making. It is economy to equip ourselves with all the needed facilities for rapid work at this pressing period of demand for labor. Have sufficient storing room. It is a losing game to stack. Clover should be cut before too far advanced, as quality is better, more nutritious and acceptable to stock, and will make a much stronger second growth. If possible, when there is no dew on it. If cut in the afternoon or the following forenoon, tedder thoroughly before noon and put in windrow or cock over night. If day following is fair, a little airing will put it in condition for housing. It can be stored in small bays with less curing than if large quantities are bulked together.

The grasses proper are in best condition for harvesting about the time of bloom falling, but it is better to begin earlier than to have it over-ripe. Keep the tedder in motion, as curing will be hastened and the hay sooner ready for the barn. Over-curing should be avoided by putting in cock when ready to haul. Cut no more at one time than you can properly care for.

MARKETING.

Our local markets need the bulk of the marketable part of the crop, thus bringing us in close touch with the consumer. Early selling for a consecutive term of years is preferable. For what we place upon our large markets, if baled before October, should be placed on end when storing either in barn or car, to prevent heating.

Fifty per cent. of our meadows are injured by too close cropping; on late and off early in the fall is a good practice. Every stock farm should have some permanent pasture land, especially in dairy districts. Care should be taken to prevent the propagation of weeds in pastures. What is more unsightly than to see lands infested with all manner of weed-growing? Where lands are not suitable for plow-

ing, they should receive attention as continuous pastures; made productive by fertilization. Nature's supply having become exhausted, we must fill their stomachs with an acceptable ration; bone and potash are good. I wish to draw a comparison between the product of our New Jersey mowing lands and their reasonable possibilities. Statistics give us the following figures for a ten-year average: Acres mown, 500,000; total yield, 600,000 tons; average per acre, one and one-fifth tons; total valuation, \$7,200,000; average price, \$14 per ton, being the highest State average in price per ton, but about sixteenth in production. I believe it possible to increase the yield 40 per cent., with an outlay of 70 per cent. of the value of the increased product, leaving a net gain of \$2 per acre, making the snug little sum of \$1,000,000. The hay crop exceeds in value any other of the State's agricultural productions.

While a prime factor in the production of grass is moisture, and a very serious injury may result from irregular rainfall, we must not be blind to the fact that we play a very important part of the programme, and we must be on hand, there with the needed soil preparation, there with our bag of seed, there with the necessary plant-food, and there with a general oversight of the whole play. This will give a feasting to our eyes of a well-studied plan, and our barns will laugh, as it were, being filled with the sweet-scented product of the husbandman's toil, and the horse, the cow and the sheep will rejoice with thanksgiving—manifest through their frolicsome nature and obedient subserviency to man's will. A condition of things confronts us in the way of expensive labor, and we should hang the target for big crops high, with an earnest endeavor to reach it.

Our experiment station is extending to us the scientific arm, and the wielding of this, in connection with practical trials, makes a four-horse team able to draw us out of the slough of despond.

The chemist's analysis and the farmers' tests are indispensable requisites of modern husbandry and the corner-stones of success in crop-feeding. To select and purchase our fertilizers with economy and apply them intelligently should be given more attention. I have given these plain facts as they have revealed themselves to me from practical tests, and hope they may be an incentive to greater effort on your part to better care for the grasses of the farm.

Mr. Meech—I understand you sow alsike clover with your timothy on account of its ability to stand the drouth. Is that your only recommendation?

Mr. Denise—The quality of the hay is also better.

Mr. Meech—Does not the alsike clover keep green longer and bloom later?

Mr. Denise—Yes, sir.

Mr. Meech—Is not that an advantage for timothy hay, because timothy mixed with red clover will be depreciated in value for market, while the alsike clover rather increases the value of the hay?

Mr. Denise—I presume so.

On motion, a vote of thanks was extended to Mr. Denise for his able treatment of the matter in hand.

The Chair—I take pleasure in introducing to the Board Mr. Samuel Cushman, Apiarist and Poultry Manager Rhode Island Agricultural Experiment Station, who will talk to you on “The Poultry Industry.”

Mr. Cushman—Mr. Chairman and gentlemen, I will speak to you briefly on this subject, and have confined my remarks to a paper I have prepared.

THE PRACTICAL POULTRY INDUSTRY—HOW MAY IT BE
FURTHER DEVELOPED?

BY SAMUEL CUSHMAN, OF THE RHODE ISLAND EXPERIMENT STATION.

When I was appointed to take up experiments to benefit the Rhode Island poultry industry the first thing I asked was the privilege of visiting New Jersey to look up certain branches of poultry culture in which this State excelled.

I learned from my visits that certain sections of your State led the whole country in the production of capons. Out here in Crosswicks I found the most rapid and practical operator or caponizer in this country, I believe. At Hammonton I saw what was at that time some of the best broiler-raising establishments in the country.

In another part of this State I visited very extensive producers of pigeon squabs who doubtless also take the lead. Probably New Jersey less than most States needs advice as to what should be done for her poultry industry. Your Vice President and Secretary seem to think, however, that I am able to give points, therefore I must try

to make them believe that I have done so. I cannot help feeling, however, that I am "bringing coals to Newcastle."

I do not pose as a walking encyclopedia of poultry knowledge. I do not come here bristling with statistics or prepared to present rose-colored views of the great profits to be made in the poultry business. No delusion has, perhaps, emptied the pockets of a greater number of victims in this country than the poultry craze. Probably more money has been wasted, actually thrown away, on elaborate and unpractical poultry-houses here in the East than on any other buildings connected with a village or farm establishment.

We are not in favor of making new recruits to poultry culture by the wholesale, but we do believe that helpful information should be freely given to those already keeping poultry, that they may keep it at a profit rather than at a loss, or if successful, that they may secure still greater success.

Although the poultry industry in this State is already of great importance, there is no doubt a possibility of developing it still further. My experience has been perhaps along the very lines that should give me some light on what may be done to still further develop this industry in any locality. I would say, first, teach the farmers and poultry-keepers the principles of profitable poultry management; second, show them which are the best breeds to keep to secure the various products; third, inform them just what the markets demand, when their products should be placed on the market, and how they should be prepared that they may be sold at the highest rates; that is, make known to the majority who keep poultry what is now known only by a few. How shall we do it? Where can one get instruction on the principles of poultry management? To tell the truth, I do not know. Most people have to pick it up here and there from every available source. I know of no place in this country where such knowledge is brought together and presented in a course of instruction or where any poultry instruction is given that is of any account.

The Royal College of Agriculture in England provides such a course, and Prof. Brown, who occupies the chair and devotes himself to these subjects, is a regular member of the Faculty. No doubt many of you have read his poultry articles which appear in certain agricultural papers in this country. They appear under the *nom de plume* of Stephen Beale.

The State agricultural colleges of this country will no doubt in time also give such instruction. They ought to be well equipped for it. Their instructors in biology, physiology, chemistry and stock-breeding and feeding could doubtless also teach these branches as they apply to poultry and give a scientific foundation knowledge that the practical poultry-keeper could build on. Such instruction, combined with that of practical men (if a person is to receive but one kind, I advise the latter), would fit one for success. A poultry-raiser that can, like educated men in other pursuits, take advantage of and apply well-known laws of chemistry, physiology, hygiene and physics to his poultry business, will be able to avoid some of the most serious obstacles to success. Scientific knowledge is often more common than the ability to make a practical application of it, but one possessing both is certainly well equipped. Agricultural colleges will give such instruction just as soon as the people require it.

A general knowledge of the various breeds or varieties of poultry is of great advantage to the poultry-raiser. Individuals gain much of this from poultry-books and other publications. This knowledge may be taught in schools and agricultural colleges by local poultry-fanciers, and given to the general public through lectures at farmers' institutes, but the most valuable sources of instruction in this direction, to the people at large, are the poultry exhibitions.

At these one may see the various breeds of fowls, and become familiar with their size, shape and markings. There, birds may be compared, and much learned as to which are thrifty and profitable, which tender and unprofitable, or only beautiful or ornamental. Although poultry associations are usually a union of fanciers, those who raise beautiful birds for recreation only, their exhibitions have done much for the practical poultry-raiser.

The principal aim of fanciers is to excel with their particular varieties. They buy the best, and study the laws of breeding and make careful selection to produce the finest types. To bring their choice productions before the public, they spend time and money to keep up their shows, and the public are the greatest gainers. Fanciers have caused pure-bred fowls to be very generally kept, and have thus scattered far and wide the material for the improvement of the common stock of the country. The keeping of choice fowls causes poultry-keepers to give them better care, and, as the result, poultry are generally rendered more profitable. Fanciers prevent the extinction of

the very breeds that the practical producer derives most profit from. Some breeds are bred for beauty and not utility, and others are made weak and worthless by too fine or close breeding, or by pampering or over-showing, but the wideawake farmer or poultry-man discards them and selects those which possess the most desirable qualities.

Poultry shows are indirectly of great value to the poultry industry of any State, even where only strictly-pure breeds are exhibited, and, like agricultural and horticultural fairs, should, we believe, receive public or State aid. The Legislatures of a number of States give an annual bounty to their principal poultry society. One poultry society in Ontario receives \$900 from the Legislature for use in holding an annual poultry exhibition, and another receives \$400 annually; and, by the way, Canada is fast coming to the front with her poultry products. Minnesota and Nebraska give, their State Poultry Society an annual grant. The latter State appropriates \$1,000 annually. Last winter the Connecticut Legislature gave \$500 to aid its State Poultry Association in holding a show at Hartford.

We believe that Rhode Island was the first to give State aid to her poultry show. She commenced with an annual bounty of \$300, and a few years later increased it to \$400, and we hope that the appropriation will soon be increased to \$1,000, the same amount that is granted to our county agricultural societies.

The expense of running a poultry exhibition in a large city each winter is quite considerable, but the advantages thus afforded the people of the State are proportionately great. The usefulness of poultry shows would be much increased if more encouragement were given to utility exhibits. If liberal prizes were also offered on fowls, geese, ducks and turkeys for their table qualities only, regardless of the purity of the breed, on various crosses, both alive and dressed, and on collections of varieties of eggs, &c., the shows would be of greater interest to all classes and of much more value to practical poultry-raisers. But the market-raisers, as a rule, do not contribute. They are to the fanciers what pot-hunters are to the sportsmen. They reap the benefit, but do not aid in preserving the sport. They usually refuse to give more than dressed poultry will bring in the market for the pure-bred birds which they secure for the improvement of their stock. They apparently grudge paying the fancier anything for his labor. There are exceptions, however, for some farmers willingly pay good prices and appreciate the value of unusually fine

males for the production of poultry, as well as the production of beef, mutton and pork.

Is it any wonder, then, that fanciers run their shows in the interest of fancy stock? They may be somewhat to blame for not offering more encouragement to other branches, and I believe it would financially help them out in their shows if they should do so. When the State, appreciating the value of these exhibitions, steps in and aids the shows with public money, she has a duty. She should do what the fanciers have done for themselves, but have not done for the ordinary poultry-keepers; that is, provide valuable object lessons that are quickly learned by them. At the time of these shows extensive practical poultry-raisers and large buyers and dealers may also be secured to lecture on fattening, dressing and shipping poultry properly. They of all persons can tell the farmers what they need most to know—furnish the very knowledge in which so many are woefully lacking.

The State should foster its industries. The poultry industry is one of the most profitable branches of agriculture, but it has received less attention and encouragement than almost any other industry. It should be so no longer. The time has come for a change. Not only should each State make an appropriation annually to insure that a poultry show shall be held within her borders each winter, but, in my opinion, she should have a special poultry commissioner on her State Board of Agriculture to look out for her poultry interests, stamp out diseases of poultry, aid and improve poultry shows, hunt out best men to lecture on poultry topics for farmers' institutes, and conduct a regular bureau of information for the poultry-keepers of the State.

The prevalence of disease among poultry is one of the greatest obstacles to success. The annual loss from this cause can hardly be estimated. The greater part of this loss could be prevented by observing with poultry the ordinary precautions taken by public health authorities in cities. Suppose ignorant persons having small-pox, scarlet fever, diphtheria and other contagious diseases were not isolated or prevented from going at large and coming in contact with well people. Suppose the clothing that they have soiled and the rooms that they have occupied were not cleansed or disinfected. The result would be like what now frequently occurs among the poultry flocks of a neighborhood. The State has a right to interfere to protect this industry from injury. It should be against the law for one

to harbor on his premises a disease of poultry which threatens the ruin of other flocks. There should be a competent and careful official on every State Board of Agriculture who should have authority to make investigations and take prompt and effective measures to stamp out and prevent a further spread of any serious poultry disease that may occur. He should, at State expense, see that bodies of deceased birds are properly disposed of, and that contaminated surroundings are thoroughly disinfected. If the premises are such that thorough disinfection is impossible, he should have the authority to prohibit the keeping of poultry on the land long enough to allow the infection to die out. Are not raisers of fowls and turkeys entitled to protection as well as breeders of sheep and cattle?

To prevent disease among poultry take every precaution lest you bring disease onto your premises. Do not buy poultry showing the slightest trace of disease or regarding which you have the slightest suspicion, for a mild case may induce a serious trouble. Keep your flocks away from those of your neighbors, especially if the latter have or have had any disease. Isolate and disinfect all sick fowls the moment they show any unfavorable symptoms. Do not let them remain with the others. Kill off the runts and unthrifty specimens lest they become disease-distributors. By making a post-mortem examination on fowls first taken sick, the trouble may oftentimes be discovered. Burn the bodies of diseased birds or bury them in quicklime. If buried in the ground, they may be unearthed by dogs or skunks and the disease spread. Doctoring fowls already sick rarely pays, but prompt preventive treatment of a flock may ward off the disease. The quicker you learn the cause of the trouble the better. Do not feed entrails of animals to fowls unless first well cooked, as they are liable to contain parasites and germs of disease. I would repeat, briefly, look to your State authorities for aid, to the Legislature for appropriations, to your State Board of Agriculture for lectures on poultry topics for grange and farmers' club meetings and for farmers' institutes, to your State Board of Agriculture for a poultry commissioner who shall be a special agent to look after the poultry interests, to your Agricultural College for suitable instruction on poultry matters, and to your State Census Commissioner to secure a thorough canvass of the various branches of the poultry industry, that you may have reliable statistics that will show the value of poultry products. The cause is a just and worthy one. Many other

industries have asked for aid, and have secured it. Should not the poultry industry do the same? If it is worth having, it is worth trying for.

Mr. Meech—How is the ordinary poultry-raiser to know whether these diseases you speak of exist among his fowls?

Mr. Cushman—There is a great reluctance on the part of most persons to touch a diseased fowl, and perhaps many do not know how to handle them. Perhaps they do not know where to look. Take the fowl and tie it on a board, with strings to its wings and legs, with the breast upwards. Cut right through the ribs and turn the breast over, exposing the internal organs. Take a sound fowl and do this, and familiarize yourself with the appearance of the internal organs of the well fowl; examine the lungs, heart and intestines, and look well through the intestines, and see what they look like. If it is a sick fowl you will probably find yellow spots on the liver, lumps on the lungs, and cheesy lumps in the bowels, and you will know it is out of the ordinary. If you do not recognize the trouble, a physician can probably tell you, and if there is no physician near by you can find out what is wrong by sending the diseased organs to the Department at Washington. Dr. Theodore Smith is Chief of the Department there, and he will, no doubt, tell you what is wrong.

In regard to roup, I think there is much to learn. Our scientific men do not know much about it. I think this disease comes from an ordinary cold, which, if allowed to run too long, causes the secretions to become infested with these disease germs, which can thus be passed from one fowl to another, either by the drinking-water or feed catching the diseased secretions as they are thrown off. This material thrown off from a roupy fowl's nostrils is infectious, and if it is allowed to drop into the drinking-water or food of the healthy fowls the whole brood will become diseased. Whenever it is possible, I would take a fowl having a cold away from the others, and do not allow them to eat from the same dish, or to roost on the same pole. You can kill every roupy fowl on the place, and bring healthy fowls and allow them to run where the roupy fowls have been, and if they take cold these germs will begin their work, for they maintain their vitality for a long time, and you will lose every fowl so affected. The authorities at Washington are taking great interest in this question of diseases of fowls, and they hope to know more about them in the near future.

Mr. Bodine—Is it an infectious or contagious disease ?

Mr. Cushman—In a sense, I should say it was both. I think fowls will catch it, and if the secretions from one diseased fowl get into the throat of a sound fowl it will also get the disease, especially if it has a slight cold.

Mr. Bodine—How can it be distinguished ?

Mr. Cushman—The secretion from a fowl with an ordinary cold has no odor for a time, but from roup it has a strong odor. When the fowls get bad the best method is to wash their nostrils with disinfectant. This kills the germs if properly done. By the time the nostrils and air-passages of the fowls are cured they are exempt from the germs.

Mr. Nicholson—You would not undertake to name a specific remedy for this disease ?

Mr. Cushman—I could only recommend that they be quarantined. If you do this and take proper precautions, you can prevent the spread of the disease. People neglect sanitary precautions, and the disease spreads.

Mr. Meech—What disinfectant would you recommend for washing the nostrils ?

Mr. Cushman—Carbolic acid. Take a pint of carbolic acid in a pail of water, and spray it around in the building, too. This will kill the germs of any contagious disease that may be about.

Mr. Haines—What is the difference between the liver of a healthy and of a sick chicken ?

Mr. Cushman—A third larger and much darker.

Mr. Haines—What causes this ?

Mr. Cushman—My idea is that the livers of chickens and fowls, like those of men, can be enlarged by lack of exercise and over-feeding. Chickens are sometimes fed too much condition powder. It will enlarge the livers of fowls if too much is given them. If you over-feed with it you will destroy your chickens.

Mr. Nicholson—What is the prevention or remedy for gapes in chickens ?

Mr. Cushman—I think New Jersey people can answer that better than I can, for we are seldom troubled with it. What I have learned of it has been mostly from New Jersey and Pennsylvania farmers, more than from any other source. I understand it is caused by a worm, which infests the wind-pipe—an embryo worm. These worms,

if they fall on the ground or in the feed or drinking-water, may be picked up by the other fowls, and thus they all become diseased. When once eaten these worms make their way to the wind-pipe of the chickens, and at certain stages of development fill the wind-pipe, and at a certain age of the fowl are fatal. An older chicken can generally cough them up, I believe, but I have never had the disease in my own flocks. If you destroy the fowls with gapes, you destroy the worms, and you are free from it; but if your fowls have gapes and you wish to cure them, the best method is to confine the chickens in a large box, with a cloth over it; then take air-slaked lime and put it through the cloth so the fowls will breathe the lime-dust; this makes them cough, and they generally get over it. The lime-dust makes the worms lose their hold, and the chickens will cough them out. In making post-mortem examinations of the trachea of fowls with the gapes, we have found large numbers of these worms. In one case five pairs were found. I have these now in a glass jar.

The authorities at Washington have reproduced from the French a work which gives the whole history of the gape worm, and you will find this in one of the reports of the Agricultural Department. In our next annual report of the experiment station, we will reproduce this article, and have also gathered all the information we could elsewhere.

There are several methods of treating fowls afflicted with these worms. You can take a chicken and drop a drop of salt water or of sweet oil in its throat, or take a feather and drop a drop of turpentine in its throat. Of course this is a good deal of trouble. The lime may be used with good effect, and is much quicker, because a number can be treated at the same time in this way. Another method is to pour carbolic acid on a hot brick, and these fumes are confined in a closed space in which the chickens are placed. Of course the chickens must be watched closely, as too much will be fatal. This may be done by means of a piece of glass let into the side of the box used for fumigating. The chickens will naturally crowd toward this window, and you can watch them readily. Care must be taken or you will kill the chicken as well as the gape worm. About a minute, or even less, will be sufficient exposure to the fumes, and this will do the work more effectually than lime even. I have not tried it myself, but I know many people who have done so, and they speak well of this method.

Mr. Cook—How many hens would you allow to a cock to insure perfect fertilization?

Mr. Cushman—It differs with the breed and the amount of space given them. There is no definite rule for any particular number, I believe.

Mr. Cook—What would be the best number to allow, in your judgment?

Mr. Cushman—One cock to even fifty hens is all right, under some circumstances, as I have found to my surprise. In close confinement one cock to about five or six hens would be about right, I should think.

Mr. Cook—Will it vary according to the breed?

Mr. Cushman—Yes, sir; it will vary in almost every case according to the breed and the room they have.

Mr. Cook—Are not fifteen or twenty hens about a safe number to allow as a rule?

Mr. Cushman—I think most fanciers allow one cock to a dozen hens, while many poultry-raisers for market allow one cock to twenty or thirty hens.

Prof. Van Deman—We had a brood of ducks at my house last year, and we also had a plenty of rosebugs. You understand this question no doubt, and you probably know the result to the little ducks after eating the rosebugs. I spoke to an old lady about it, and she said to put some molasses down the throats of the ducks, and this would kill the bugs and the ducks would get well. We tried it with fair success.

Mr. Cushman—I am glad to hear of that remedy. We raise ducks and have had forty killed in one day by rosebugs, but we think the only remedy is to shut them away from the rosebugs, for, while very young, the rosebugs will kill the ducks if they eat them.

Mr. Conrow—Can the ducks swallow the rosebugs and live afterwards?

Mr. Cushman—The bugs seem to irritate the wind-pipe; perhaps in the case of the molasses remedy this may act as a cathartic and send them through quickly.

I want to say a word about breeds. The Brahmas and Cochins are among the hardiest, and the Wyandotte is a most excellent breed. The Leghorn is one of the best for the production of eggs, but I do not take as much stock in them as I did ten or fifteen years ago.

The Minorcas are now much better than the Leghorns. The fanciers have undoubtedly done much good, and the country has been benefited by them, but they have also ruined many good breeds. The best breeds for the table are the game birds, but you cannot raise many of them; they are not so prolific and the flesh gets hard earlier than some other breeds. A good cross is desirable for a market poultry, and in our work we have tried to produce the best crosses. We have found the Light Brahma crossed with the Indian Game makes an excellent fowl. This cross is also very fleshy and has a nice breast, but the cross is very hardy, and therefore more desirable. As a rule the Indian Game fowl is not hardy, but this is one of the instances where the resulting product of the cross is desirable, for in combining the two you get the best results. This is true of this cross not only in the flesh, but the egg results are also very satisfactory. The Indian Game is not a good layer, but the resulting cross seems to keep up the good laying qualities of the Brahmas, while they have the breast and flesh development of the Indian Game fowls. Many of the breeds so heavily pushed and advertised are not so good as this cross, in many respects.

The market-men of to-day seem to demand yellow-legged fowls, rather than other points of desirability. For my part, I would as soon have a white or black-legged fowl as the yellow-legged. The Dorking is a good breed for market, but so many of the young die off that they are not as desirable as some of the hardier breeds or crosses, and the percentage of deaths among the young is a very important point in the final results of poultry-raising for the year. The production of eggs for market is about the surest branch of the business anyone can undertake, for it is sure to make a profit if properly managed. Anyone can take this up. Then, again, you can raise chickens where turkeys will not thrive at all, for wet land is favorable to the production of diseases, while sandy, dry land is unfavorable for the production of disease germs. The germs are kept alive by dampness, while in sandy, dry soils, the germs dry up and lose their vitality more readily. Sunlight, as you know, is the greatest germ-killer known. While carbolic acid will kill off the germs, sunlight will do it in much shorter time, so that it can readily be seen that sunlight is of great importance to the poultry-raiser. To make a success of this it is important that all points of importance be taken advantage of. Competition grows stronger every day, and corn and

wheat are so cheap in the West they can raise chickens much cheaper than we, and the cold storage system brings them within easy reach of the Eastern markets. Eggs, when fresh, are in demand every day, so that this part of the business is the best for farmers in the East. Western eggs cannot be put on the market in competition with fresh-laid eggs in the East, and this gives you a decided advantage over Western competition.

In our State we have farms where 3,000 hens are kept with no more trouble than on the average farm with its flock of twenty or twenty-five hens. The most successful farms I have seen with fowls are those which are conducted on the colony plan, where the birds are kept in houses a sufficient distance apart so they won't leave their own houses and mix up with the other colonies. They have no yard for each colony, and the only care given them is when they are fed and their eggs collected. Then, again, when there is a serious disease breaks out in one colony it don't run through the whole flock, and if there are no thieves in the neighborhood, there is little or no trouble. Raising eggs on this colony plan is the best investment I know of.

A Member—How are the houses built?

Mr. Cushman—They are set about in the field, so the colonies do not run together. There is no special attempt at regularity, and no great effort to make the houses warm. The doors are left open for the fowls to pass in and out, and they take care of themselves, after a fashion, and only require to be fed.

A Member—How much ground is occupied by the 3,000 hens?

Mr. Cushman—I think there are about 75 houses on a farm of 100 acres. You can stand at the residence of the owner and see these houses scattered in all directions, and each flock keeps separate and distinct from the other flocks.

A Member—What care do they get?

Mr. Cushman—The wagon goes around every day with feed, and the eggs are gathered at the same time. The droppings are only cleaned out about once in one month or two months.

A Member—How many birds in each flock?

Mr. Cushman—From 20 to 40. The houses are built like an "A" tent, and are open to the south. The south end is not inclosed at all, but is simply covered with wire netting. The houses are cold, of course, and in winter it is necessary to collect the eggs pretty often, to prevent them from freezing.

A Member—Does he buy his birds, or raise them ?

Mr. Cushman—He buys all his birds in the fall, and never raises any. He made a profit of \$1.25 a head last year, while some raisers have done much better, realizing \$2.50 per head, to my knowledge. Of course, care must be exercised to prevent disease from getting in the flocks, or the first thing you know your whole flock will be out of condition, and you will lose two or three months getting them into shape again.

A Member—Do the birds occupy the whole 100 acres, or only a part of the farm ?

Mr. Cushman—I can hardly answer that, but I can tell you the distance the houses are apart, and that may answer the question. They are set from 50 to 100 feet apart in the field. In caring for them they have one wagon which carries a water-tank, and another is a grain-bin, in which there is a compartment for the eggs. All the work is done by ordinary unskilled labor, Norwegian in this case. If you have but one house in which your poultry is housed you require skilled help, while in this case you do not.

A Member—Do they get good results ?

Mr. Cushman—Yes, sir. This has been done for fifteen years, and they go a little deeper every year.

A Member—What do they feed ?

Mr. Cushman—They have two large boilers, and they feed cracked corn and wheat, and may even burn it a little in cooking it. All the feed is handled by machinery as much as possible, and it is only necessary to lift it to the wagon. Then the wagon is driven through the field, and the cooked feed is thrown out to the fowls as they go by.

A Member—Do they feed much cooked feed ?

Mr. Cushman—They feed cooked feed once or twice a day in winter, and whole corn at night, I think.

A Member—What breeds ?

Mr. Cushman—They use strong, hardy crosses, like the White Brahma and Brown Leghorn. I believe these crosses are more desirable for profit than fine, pure-bred fowls, but of course you must have pure-bred fowls to get good cross breeds.

A Member—How do the Plymouth Rocks answer ?

Mr. Cushman—I consider them an excellent breed. I do not know how they may be in some sections, as strains differ. They may even differ in two different yards more than two different breeds.

Mr. Gillingham—How about the White Plymouth Rock ?

Mr. Cushman—They are not as hardy.

Mr. Cook—Do they fence in the inclosures for the different colonies ?

Mr. Cushman—They have no inclosures. The colonies are placed over the field so the grass will hold its own, in spite of the flock feeding on it. It is good meadow pasture land and they do not keep the grass down very short, nor do the flocks run together, each colony keeping together.

Mr. Gillingham—They can run together if they want to ?

Mr. Cushman—Yes, but they don't do it. They are shut up together at first, and let out at night. The males are jealous of each other, and are ready to fight off any intruder near their respective flocks or houses. It is working all right, and they have no difficulty with the flocks running together.

A Member—Do they feed raw meat and bone ?

Mr. Cushman—I think not. I am not prepared to say much about these as a feed, but I think it is apt to become something of a fad among poultry-raisers. There is danger of feeding your fowls too much, and thereby making them liable to disease. A small amount of meat and bone makes an excellent food, but not too much. The meat should be cooked, as it is more easily digested, and the fowls are not so apt to have foul, rank indigestion.

On motion of Mr. Blish, a vote of thanks was unanimously tendered Mr. Cushman for his valuable address.

Mr. Nicholson—I would like to nominate Prof. E. B. Voorhees as Chemist for this State Board of Agriculture, Prof. Halsted as Botanist and Bacteriologist, and Prof. Smith as Entomologist. I move that these gentlemen be chosen to fill these positions.

The motion was unanimously agreed to.

Mr. Burrough—We have here a fine specimen of the oyster spat, exhibited by Captain Burton. I move that he be allowed to prepare a short paper for publication in the annual report of this Board, giving such descriptions of these oyster spats as he may see fit.

Agreed to.

The Chair announced as Permanent Committee on Legislation the following gentlemen: Dr. J. B. Ward, Charles Collins and John T. Cox.

REPORT OF THE COMMITTEE TO AUDIT THE TREASURER'S
ACCOUNTS.

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

Your committee appointed to examine and audit the accounts of the Treasurer of this Board, report they have carefully examined the bills, comparing them with the vouchers, and find them correct in every respect.

HAL ALLAIRE,
SAMUEL B. KETCHAM,
Committee.

There being no further business the Board then adjourned *sine die*.

POULTRY FOR PROFIT.

BY C. E. CHAPMAN, OF PERUVILLE, N. Y.

POULTRY FOR PROFIT.

The growing of grain and the feeding of cattle for beef have become so unprofitable, by reason of the rapid extension of railroads, which bring the products of distant cheap lands to our very doors, that they must be abandoned. The careless robbing of soil-fertility has reduced the amount that can possibly be grown to an almost unprofitable extent, and until the Western land becomes so depleted that farmers there, too, will be compelled to restore fertility, we must seek some other source of profit, or growl about agricultural depression. Smaller areas of high-priced land must be devoted to intensive, thoughtful culture. A system must be adopted that will not only bring a reasonable profit, but will also increase the value (fertility) of the farm. The keeping of hens has always been looked upon as a side issue of doubtful character, and rightly, too, when managed in the slipshod manner which is a characteristic of the unsuccessful poultry-keeper.

On a farm of 75 acres it will be hardly possible to grow all the supplies needed for 600 hens and the average family. Probably 1,000 bushels of grain, all the skim milk obtained from six cows, and the vegetable food from several acres, will be consumed by that number of hens. Out of all this fertility but little will be sold, there being scarcely half a cent's worth in a dozen eggs. Here is a remedy for depression. The business requires a comparatively small amount of capital, and is a healthful and pleasing occupation for both sexes who are unable to do heavy muscular work. A visit to the henneries of C. H. Wyckoff, Groton, N. Y., reveals the fact that it is also a business which can be made to take the time of the quickest, smartest and healthiest man alive, and reward him a hundredfold.

HOW THIS HENNERY WAS HATCHED.

As a "bit of history" which has a point to it may be interesting, I will give a few facts in regard to the commencement of this plant, which is now the most profitable one in this country where eggs for table use only are sought. Six years ago the farm was bought and dairying begun. Capital was scarce and the buildings poor. The profits the first year were not enough to warrant expenditure, and how were the cows to be kept warm? Eighteen Plymouth Rocks had wandered at their own sweet will, ruining the garden and the owner's patience. He told the wife that the next season they should be confined or sold. An earnest consultation with her resulted in their being retained, confined to a house and yard, and a record of the eggs sold and the food consumed showed a profit of 75 cents per hen. White Leghorn males were introduced, and the number of fowls was increased to 100. These crosses being more profitable, more Leghorn blood was introduced, and the flocks increased until they had become practically full-blood Silver-crested White Leghorn, and numbered 600. This is the way in which nearly all great, successful schemes are worked out. Necessity compels economy, thought and hard work, and allows no advance until experience enough is gained to insure success. This man's example is worthy of study. In an extremity, go to your wife, and with her look the situation squarely in the face. Let no misleading catch phrase, like "No special fitness for the business," frighten you. Think, decide, begin in a small way, and, like Lige's bulldog, "die," but never "let go," and success will be yours. Mr. Wyokoff cares so little for fancy poultry that when at the State Fair last fall he forgot there was a poultry exhibit until his attention was called to it. He is "in it" for the dollars, and the following record shows they are there :

Hens, average number.....	600
Eggs each, average.....	168
Price per dozen, average	21½c.
Eggs, net.....	\$1,800 00
Stock sold.....	70 00
Manure, at 20c. bushel.....	270 00
	<hr/>
	\$2,140 00

POULTRY FOR PROFIT.

229

Cost of feed.....	\$660 00
Labor, 12 months, at \$30.....	360 00
Interest, 5 per cent. on \$1,000.....	50 00
Net profit.....	1,070 00
	<hr/>
	\$2,140 00

A business that pays \$30 per month and 105 per cent. interest on the investment cannot be called a side issue. There is no "patent" on the means to success. Only the carefulness, regularity and thought necessary for success in other branches are required. Mr. Wycoff is quiet in manner, and a stranger who wished to go through the buildings would be invited to discard any red scarf or bright-colored clothing, and requested to move very carefully. Why? It has been proven that any unusual flutter or excitement affects the number of eggs laid the next day. A loss of twenty-five eggs, at three cents each, is too much. He is also a close observer, frequently weighing some of the flock and noting their condition, it being essential that the hen shall be kept in the "pink of condition" for the highest profit. Everything is kept clean, and all possible wants of the hen are regularly supplied, so that she will not be delayed by want of any egg element. Due regard to sanitary conditions, proper food and drink, combined with regularity and common sense, are his remedies, or rather preventives, of diseases of all kinds. He rarely has a sick hen, and raises a large percentage of his chickens. By the use of incubators a larger percentage of healthy chickens are hatched than with hens, and the brooders grow them faster, they being perfectly free from vermin and gapes, exposure to changes of temperature, accident and unsuitable food.

The houses are six in number, and have a partition through the center, each end being sufficient for fifty hens. Long yards the width of the building are attached to the house on both sides, thus giving one yard for each flock. The hens are never let out of the house and yards, and are confined to the house as soon as the cold fall rains commence. Mr. Wycoff stated that they had never seen snow. A cold hen never lays, and "hemlock lumber is cheaper than food." There will always be a falling off in the eggs in cold weather if the hens are allowed to get their feet wet. The hen herself is an important factor, and considerable attention has been given to the breeding of a producing type, and the result has been to discard the standard first-premium style.

EGG TYPE AND SCRATCH TYPE.

One hundred pullets, hatched at one time and raised together, were placed in one house, and when one laid she was taken out. This was continued until there were fifty in each house. A critical examination

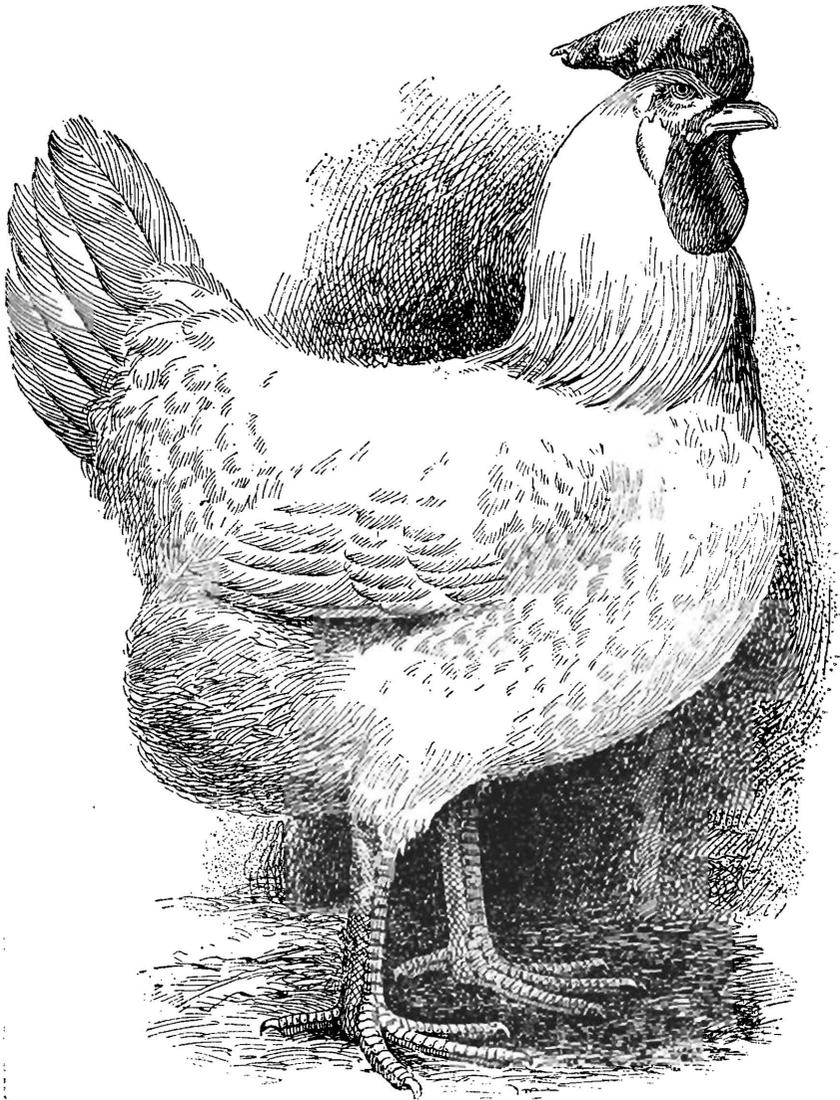


Fig. 1.

showed that nearly all that were laying were of the type No. 1 (see Fig. 1), while those that were still unproductive resembled in shape and appearance No. 2 (see Fig. 2), which is a longer-legged, ungainly, slim-bodied hen that spends her time in looking for something to get scared at. A record of the two flocks showed a difference of 20 per cent. in the number of eggs laid. No. 1 kept laying till nearly

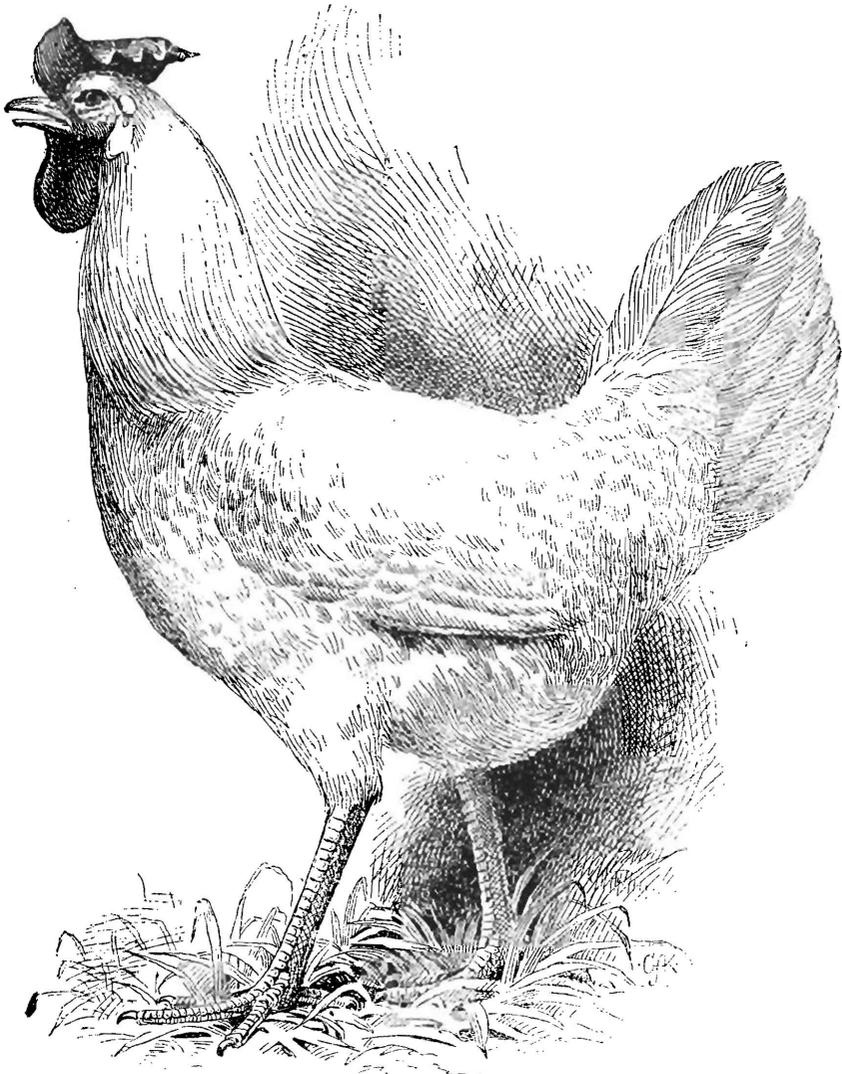


Fig. 2.

denuded of feathers, and finished moulting and began laying quicker than No. 2. A short-legged, deep-bodied, full-breasted, wedge-shaped, larged-combed hen, with a quiet disposition, has capacity to consume large quantities of food, and return eggs instead of noise and flutter. Mr. Wycoff is confident that his flock, grown from selected mothers, will average two hundred eggs each for 1891. The 20 per cent. advance already obtained makes a difference of one dollar each in the two flocks. There are "families" of butter cows among the Jerseys, and someday there will be "egg hens" among the already-famous Leghorns. One of these improved hens placed in the hands of one ignorant of feeding principles would be compelled to descend to a level with the rest of his flock from lack of a well-balanced ration.

EGG FOODS AND EGG PRODUCTION.

The egg-shell is largely carbonate and phosphate of lime, while the edible portion is composed of 74.6 per cent. of water, 12.5 per cent. of albuminoids, 10 per cent. of fat and 9 per cent. of ash. This is the average of 80 eggs, analyzed at the Geneva Experiment Station. Milk and meat are largely albumen. The hen cannot elaborate lime and albumen from fat or starchy food, which is chiefly valuable for the warmth it furnishes; hence corn is a poor food, and milk, meat and shell are very essential for egg production. When the hens are laying large quantities of eggs the shell-boxes will soon be empty, but they are scarcely touched at other times. Some prominent writers have written much against the expense of oyster, clam and sea-shells, claiming they only served the purpose of "grit or grinders," which could be furnished much cheaper, and that the lime in the egg-shell came from other sources; but when the attendant who cleans the eggs can tell by the number of eggs brought in and the thinness of the shell, that the boxes are empty without going to look, it seems as if these writers must be mistaken. Eggs differ in quality and appearance in accordance with the nature of the food. Cotton-seed meal in excess gives an egg a week-old taste that is disgusting. Onions give a rank taste. Too much clover hay and a bad-colored lot of sea-shells spoil the beautiful white of the egg-shells. Wealthy city people have nothing to do but cultivate a critical appetite, and are slaves to it. The guaranteed-fresh, large, rich, white and clean eggs of this hennery are now selling for 60 cents per dozen in the city. Candy-

makers are making trials of them for use in the making of the finest candies. The fowls are fed on green food every day in the year—one bushel of beets per day, cut fine, in winter, and green grass in spring; in summer, Swiss chard is good, the leaves growing again when broken. All refuse cabbage, and other vegetable matter that is not decayed, are used. One bushel of green-cured clover hay is cut very fine and cooked. A mixture of the feeding ration is mixed with this, boiling water being used if no milk can be obtained. At one time much larger quantities of clover hay were used, which largely reduced the cost of feed per day, but it largely reduced the egg product, and was abandoned. It is too bulky, and the hen cannot eat enough of it to supply nutriment for heavy egg production. Charcoal contains no nourishment, but prevents fermentation, or bad effects from over eating. There is no economy in keeping a pullet in such poor condition that it will be a year before she begins to lay. April-hatched pullets should be "pushed" for all they are worth, and begin laying in the fall. The hen that is laying should be crowded to the utmost capacity, and during the moulting season the growth of feathers is a great drain on the system, which requires plenty of food to keep the hen in condition and hasten the growth so that she can begin laying again.

Excitement costs food and eggs; keep no males to worry, except in breeding pens. A lot of young chicks were sorted over and all the males that could be distinguished were put in a pen by themselves. Unlimited amounts of corn were fed them until killed. The pullets and a few males that could not be detected at the time were fed wheat and other nitrogenous foods. The corn-fed males, when killed, were a mass of yellow fat, and had small bones. The others were as heavy, but were all muscle, and had bones twice as large. They were in much the best condition for health and breeding purposes.

HOW THE HENS WERE FED.

The following tables give the ration that has given the best results for egg production for 600 hens:

1. Morning, by weight, all they can eat of the following mixture: One-half bran, one-fourth corn and one-fourth oats, mixed with hot water or milk, together with one pint of salt, two quarts of charcoal

and one bushel of clover hay cut fine. If there be no milk, add 16 pounds of chopped meat and one bushel of beets cut fine.

2. Noon, whole grain by measure. Two quarts oats, one buckwheat and one wheat; give one quart to 50 hens in chaff.

3. Night, the same as No. 2, all they will eat.

4. Drink, milk or pure water.

For chickens, a cake made of sour milk, salt and soda made thick with sifted feed and baked, also cracked wheat.

HOUSES FOR THE HENS.

Mr. Wycoff prefers the ordinary one-story building because it compels constant attendance, which insures cleanliness. Fig. 3 represents a model hen-house with a southern exposure. The walls are

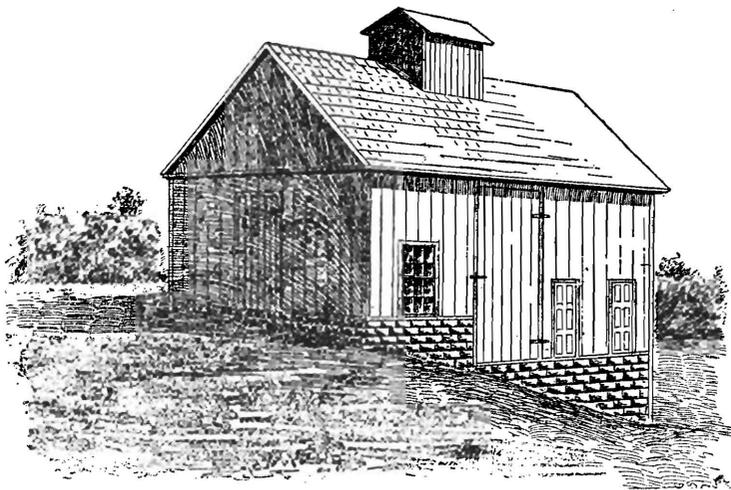


Fig. 3.

laid in mortar on top of a trench which is filled with broken stones. This drains the bottom and keeps out rats. The lower story is seven feet high and the upper three feet to the plate. Common hemlock lumber lined with tarred paper and ceiled up with matched hemlock inside of that, is used. The tarred paper gives a permanent odor which is repulsive to vermin. There are no ventilators. They let out the warmth and cause a draft. All the fresh air needed will work in around the doors and windows. But few of the latter are needed.

They make the house too warm in summer and too cold in winter. There are not enough sunny days in winter to pay for them. Inside there should be just as few things as possible, and all should be loose, so that they can be taken down, carried out and washed, scoured and soaked in kerosene, to rid them of vermin. Fig. 4 shows the

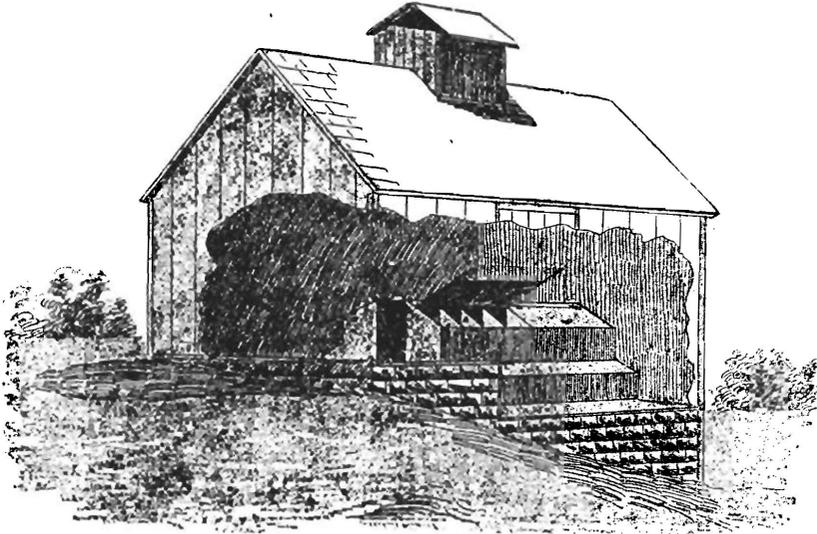


Fig. 4.

manner of attaching roosts in the upper story. The cross sticks are fastened to rafters by a bolt, and, with the poles, can be raised up and fastened while the floor is being cleaned. The poles are young saplings of proper size stripped of bark. This leaves no hiding place for lice. The fowls are above the carbonic acid gas, which settles to the floor, and below the warmer odor-laden air. The droppings being on a board floor, are always dry and by the aid of plaster and road-dust everything can be kept sweet and clean without being cleaned out too often. During the day the fowls remain in the lower earth-banked room and have a smaller space above in which they can keep warm at night. The hens reach the upper room by means of stairs, through a trap-door, which is closed at night. Nothing mars the looks of a group of fine fowls like a background of filth and dirty roosts. Fig. 4 shows the nests and dirt-boxes. The nests have slanting, hinged covers, and an alley behind them for entrance. When the cover is shut, the nest is darkened and a hen will seldom eat the eggs in such

a nest. Under the nests, which are opposite the windows and two feet from the floor, are the dust-boxes, which are filled with sand, gravel, ground bone, shells and road-dust. The feeding trough is V-shaped, and a section of eave-trough, with board ends and short legs, makes the best drinking-vessels.

A building fifteen feet by sixty feet will give plenty of room for 100 hens, divided into three flocks, and need not cost over \$75. The yards should be long for ease in plowing, and a row of plum trees down the center will furnish shade and the finest fruit. The yards are plowed up to loosen the soil for the hens, and to cultivate the trees and to keep the place clean.

THIRTY-FIVE YEARS' EXPERIENCE IN
DAIRYING.

BY B. C. SEARS, BLOOMING GROVE, N. Y.

(237)

You Are Viewing an Archived Copy from the New Jersey State Library

* THIRTY-FIVE YEARS' EXPERIENCE IN DAIRYING.

My friend, your honored Secretary of the State Board, has asked me to give to you my experience in dairying for twenty years.

I shall go back for a longer period than that. I find records of milk sold during the years 1859 and 1860, upon a contract to deliver milk at the railroad station during May, June, July and August, at 2 cents per quart; September, October, March and April, at 3 cents per quart; November, December, January and February, at $3\frac{1}{2}$ cents per quart. These figures are given for milk delivered at the railroad station, the farmer furnishing the cans, but the measure used is the same as that by which the milk is sold, an even 40 quarts beer measure to the can.

I cannot find my account-book for 1859, but I find in my accounts for 1860 that I paid for corn meal, \$35 per ton; cow feed, I presume, corn and oats, \$32.50 per ton; wheat bran, \$25 per ton; wheat middlings, \$35 per ton; nails, salt, &c., 25 per cent. higher than now. I paid for a cow, \$50; timothy seed, \$4; clover, \$5.25 per bushel, but wages were lower, my men I paid \$12.50 per month, for seven months, and board; carpenters, \$1 to \$1.25 per day of eleven or twelve hours, and board. As to cost of living, I find sugar, $8\frac{1}{2}$ to 9 and 10 cents per pound; flour, \$8 per barrel; coffee, 18 cents per pound; tea, 50 cents per pound; molasses, 50 cents per gallon; veal and beef, 10 to 12 cents retail; kerosene, \$1 per gallon.

In 1864, milk averaged for the year nearly 6 cents for each quart I sold, reaching as high as 8 cents per quart. That year I sold off forty acres of land, \$1,760 worth of milk, averaging \$146 per cow, beside calf, and some milk churned, but corn meal was worth \$65 and \$70 per ton, and other feeds in proportion. Cows cost about \$80

* Being the substance of an address given at a number of Farmers' Institutes during the past winter.

per head, and sold as high for beef; milk cans cost \$15 per pair, sugar, 22 to 30 cents per pound; flour, \$15 to \$18 per barrel; molasses, \$1.25 per gallon; kerosene, \$1 per gallon; tea, \$1.35 per pound; coal, at retail, \$12 per ton.

During the year 1879, milk was 2½ cents per quart for January, February, March and October; 2 cents per quart for April, May, June, July, August and September, and 3 cents per quart for November and December. I cannot find my account-book for 1878, but from my best recollection the purchasing power of one quart of milk was less in 1879 than in 1893-94. I have prepared the following table of the purchasing power of one quart of milk at the periods named, which is as nearly accurate as my account-books will enable me to make it. My purchases at the earlier dates were at retail, later in carload lots, always for cash.

The number of quarts of milk required to purchase the following articles are given in the table and are approximately correct.

	1860.	1864.	January, 1895.
One ton corn meal.....	1,000 quarts.	1,100 quarts.	675 quarts.
One ton corn and oats....	960 "	1,100 "	700 "
One ton wheat-bran.....	730 "	600 "	600 "
One barrel flour.....	266 "	300 "	140 "
One pound coffee.....	6 "	10 "	10 "
One pound tea.....	17 "	23 "	15 "
One gallon molasses.....	17 "	21 "	20 "
One gallon kerosene.....	33 "	16½ "	3 "
One ton coal.....	None used.	200 "	150 "

In 1879, as I have stated, I judge the purchasing power of one quart of milk was less than any period named above.

During these years I have seen the territory contributing to the milk-supply of New York City, extended from the county of Orange, east of the Shawungunk range of mountains, over the Erie railroad, and the Hudson river counties on the east as far north as Albany, over the Harlem railroad, with a few cans by boat on river and Sound, upon the whole, perhaps, 200,000 quarts per day, until now western New England, through the Housatonic railroad; the Mohawk valley, through the New York Central and its branch lines; the Delaware valley, the Susquehanna and the Chemung valleys, through the Erie railroad; all northern New Jersey and north-eastern Pennsylvania, through the Delaware, Lackawanna and West-

ern, and the New York, Susquehanna and Western; in fact, all the country within three hundred and fifty miles of New York to north and west of that city, every day and night of the year pours its stream of milk into New York City; while I am informed that the city of Philadelphia is almost a competitor with New York City for the milk-supply of New York State from the shores of Lake Ontario southward, through the Lehigh Valley railroad, while your cities of Newark, Jersey City and Paterson are also furnished in the same way, so that those of us who once thought we were secure in a market for our dairy products near our own doors find ourselves shoulder to shoulder with those far beyond us, successful competitors with us, through the railroad fiction, that "a long haul costs no more than a short one," and for which long haul they provide increased accommodations by means of refrigerator cars, &c., the charges being the same for any distance, and all more per hundred pounds than from Chicago to the seaboard for imperishable freight; and yet, as by table shown, the comparative price of milk is as high as ever, or we, the milk producers, are not suffering as much as many others from the wonderfully-increased productive power, almost unlimited by means of machinery and labor-saving inventions of man and the limited power to consume the products which he is now able to produce.

This enlarged consumption has been brought about by furnishing a better article, in more attractive shape, placing it in the homes of our customers in bottles, in the form of heavy cream, and making a market by making our product more attractive to customers, more of a necessity as a food for themselves and their children, for invalids, and for drinking in the place of tea and coffee, for which purpose it must be always sweet and clean.

Whatever may be the demand there can be no doubt that the supply will be forthcoming, and that we cannot look for relatively higher prices than now prevail. Then what shall we do to hold our own? We must make a good article, and, to make a profit, as cheaply as we can.

As Secretary Dye has asked for my experience, at the risk of seeming egotistic I will give you the methods followed on Blooming Grove Farm for the production and care of milk.

Previous to the year 1894 a large part of the dairy had been reared upon the farm, and consisted largely of Ayrshire and Ayrshire grade cows. When an opportunity offered Jersey grade cows were used as

a foundation stock, but having lost a large part of our herd by having them tested by tuberculin, we have been obliged to purchase Western cows, as best we could do, for the past year, and having an opportunity to compare them, feel like advising you to raise, as far as you can, calves from your best cows, crossed always with a *full-blooded sire* of such breed as may be best suited to your purpose.

Having arranged for your dairy, the stables are next important. At Blooming Grove the stables are in the second story, with manure-cellar in basement for 60 cows. We have 100 feet in length by 34 feet wide, ceiling 8 to 9 feet, plenty of large double windows, sash hung on weights, to be raised and lowered at will. This holds 30 cows on each side. They are fastened by swing stanchions, made by Parsons & Co., Addison, N. Y., which allow them to lick themselves, and lie down with head on their side. They have water between every two cows; have no mangers, but an open feeding-alley 12 feet wide through center, thoroughly ventilated at each end by windows and doors. The stand for cows is 4 feet 10 inches to 5 feet, drop 14 inches by 8 inches, and walk behind 4 feet; building filled in with brick, and making a light, airy stable, with plenty of sunlight and pleasant to work in, a matter of some moment, when we think how much more time we spend there than in our parlors. We have room over the cows for about 70 tons of hay, which comes down through open trap-doors, which are opened as soon as each section or bin is emptied, and the next one thrown down through that one. These also serve excellent purpose as ventilators when raised a little way, or in warm weather thrown wide open. The walks and feeding gang-way open out upon grade at one end; at the other upon the barn floor. At one side of barn floor is a feed-room, large enough to hold two to three carloads of feed. The feed is drawn in on barn floor and unloaded into feed-room. Back of stables are the silos, 12 feet by 16 feet, and 21 feet in depth and height; two of them. A six-horse-power steam-engine, operated by steam from a boiler 180 feet distant, stands on floor, and cuts and elevates ensilage into silo. When it is fed out it is thrown onto the floor and loaded into boxes on wheels, which are about 2 feet 6 inches by 3 feet, large enough to hold two hundred and fifty pounds of feed, with handles, the single axle and two wheels being so placed that some weight comes on the man; then trucks of ensilage are wheeled into the feeding alley and dumped on the floor, the ground feed in another truck having been

brought in first; then one man feeds the ensilage with a steel scoop, while another deals out the feed ration, which has been carefully mixed on the floor of the feed-room, and which is fed with a small steel scoop, cut out at the tin-shop, and fitted with wooden end, and handle like a flour scoop, and with which a skillful feeder will soon learn to give each cow her portion of the food, graduating it by her capacity to consume and make returns for her feed; at the same time the ground feed is mixed with the ensilage with a hay fork. In this way sixty cows are fed in about twenty minutes by three men every night. Afterwards the mess is kept swept up to them until all eaten, which is not long. The great dependence for maintenance of our dairy is, of course, the hay from our natural meadows, but it has always been necessary to plow and raise more or less corn. We began to cut our cornstalks by horse-power and mix with wet barley sprouts twelve hours before feeding, with good results, the corn being ground and fed, cob and all. In this way we made one year from ten acres of very good corn 24,000 quarts of milk. Later we cut by steam-power and steamed stalks and wheat bran with good results, but for three or four years we have had silos, and believe it the most economical way of taking care of our corn crop, avoiding the long and tedious work of husking, the all-winter job of cutting and stemming stalks, the cost of grinding and the loss of the succulent quality of the stalk and grain. We try to raise as good a crop of corn for grain as we can, planting in hills, and when beginning to glaze cut up three-eighths of an inch in length into the silos. The verdict of all concerned, including cows and consumers of milk, is that the silo has come to stay.

We have tried very many different ways of feeding and many feeding stuffs, and have settled down to the belief that the balanced ration, according to the German standard (perhaps somewhat modified), is the best for the cow—productive of better results in quantity and quality, if feeds are judiciously selected and judiciously fed, and, until further light is given to us, we shall continue to feed for both quantity and quality along the line of the balanced ration. I will also add that eight horses on the farm have been kept upon a ration of dried grains, hominy meal and hay, according to the formula you all have from your Experiment Station Bulletin, issued by Director E. B. Voorhees.

I add a few rations which may suit your locality and the food-sup-

ply you have ; if not, they may be changed to suit by a little study. The ensilage is made from eight-rowed flint corn, very rich in grain, and therefore fed more sparingly than we would otherwise feed :

20 lbs. of ensilage.
8 lbs. of upland hay.
5 lbs. dried brewers' grains.
3 lbs. of wheat middlings.
3 lbs. of gluten meal.
Nutritive ratio, 1 to 5.24.

Another, adapted for fall feeding with pasture, and is one-half profitable ration, the pasture to furnish other half :

5 lbs. upland hay.
2 lbs. wheat middlings, red or brown, coarse.
2 lbs. dried brewers' grains.
1 lb. Buffalo gluten feed.

If ensilage is not so rich, use this :

30 lbs. ensilage.
10 lbs. upland hay.
3 lbs. red-wheat middlings.
3 lbs. gluten feed or dried grains.
2 lbs. cotton-seed meal.
Nutritive ratio, 1 to 5.6.

Having your dairy, your stable and your feed, your cows should be regularly, carefully and gently milked, the milk aërated and cooled as soon as milked in a room apart from the stable, kept at 50° or less until shipped ; or with us it is bottled, closed air-tight, and kept in ice-water until time to ship, then shipped sixty miles by rail and delivered by our own wagons the next morning.

Thus, by careful attention to our stock, by feeding a balanced ration for quality as well as quantity, by careful selection and breeding of our dairy, by careful handling of our milk after it is produced, by producing it at such times as the consumer needs it, and getting it to him in good order, I feel that we can hold the fort against all comers, and make others fear our competition more than we fear theirs.

BUTTER-MAKING.

BY PROF. JAMES CHEESMAN, PRESIDENT NEW ENGLAND BUTTER-
MAKERS' AND CHEESE-MAKERS' ASSOCIATION.

(245)

You Are Viewing an Archived Copy from the New Jersey State Library

BUTTER-MAKING.*

All parts of the country will benefit immensely from this Chicago butter exhibition at the World's Fair, and none more than the Eastern men. The prices we get are in the main regulated by the prices realized on the great volume of Western goods. Our New England butter values are not arbitrary, and the prices we sell for are so much per pound above the bulky make of the great West. Her farmers are more alive to the economies of production than formerly; they do not now feed so many unprofitable animals as they did. Babcock and the price of beef have joined forces, and killed off the lower types of dairy cows.

There are two, or perhaps three, influences we shall meet in the West in the next few years. Her cows are improving very rapidly, and the cost of milk-stuffs is much lower there than here. Then the very large majority of her cows come in fresh in spring, and help swell the market in the early summer with finer goods. They don't milk their cows as long as we do previous to calving. The competition which should interest us most is the strong interest some Western farmers show in their use of good bulls. Wisconsin is perhaps more alive to this source of improvement than others. From all I can learn she has a very large number of high-grade cows. The nearness of her best creameries to Chicago has enabled them to build up a retail trade with the consumer. This has reacted very favorably on the patrons, in awakening a rivalry to own good cows. The per cow earnings govern the rate of profit as well as the aggregate income. Hence these patrons figure closely on the dairy merit of the individual animal. I believe their best men give much closer attention than formerly to the preparation of the cow rations, and to the yield per

*Mr. Cheesman made a number of addresses on dairy subjects at the County Farmers' Institutes during December, 1894. The following is an extract only from the address on the "World's Fair Butter Scores and What They Teach."

cow for food consumed. Up to the present only a few men have accepted the principle that it is both practicable and profitable to systematically test each individual and keep a record of the milk and its fat content. When a cow is shrinking it is very important to watch this part of the daily work.

There are two ways of estimating the churn-yield of a cow. Suppose she is a good working grade of 1,000 pounds, and that her milk-yield is 7,000 pounds a year, and averages only as much fat as the Massachusetts standard calls for—3.7 per cent. If the butter is made dry and firm we should divide her 259 pounds of fat by 84 and multiply by 100. As well-made butter seldom exceeds 84 per cent. of absolute fat, this will show 308 pounds of commercial butter. If the butter is not so well made, and contains more water, we can adopt the Chicago rule of 80 per cent. fat in a pound of butter. We shall then divide the quantity of fat by 4 and multiply by 5, and the result is 324 pounds of commercial butter, or 16 pounds extra. This explains why some creamery-men get larger yields than farm-made butters show. Now suppose the cow we keep is a high-grade Jersey of only 800 or 850 pounds. With generous treatment she will give at least 6,000 pounds, and sometimes 8,000 pounds of milk a year. Her milk will test about 4.50 of fat, which on the 84 per cent. basis will yield 321 pounds of commercial butter. Butter from this type of animal can be produced at a lower food cost than from a nondescript grade, such as one often sees among milk producers. The cattle-test at Chicago settled one point very definitely, and that is, that while cows of large build produce more butter in proportion to their size, they also cost more to feed. Classified according to live weight, and with full allowance for individual characteristics, a greater number of the most profitable butter cows will be found below rather than above the 1,000-pound limit.

Let us consider the characteristics of farm and creamery-made butters, and the relative effects of the seasons, food, shelter, and also the influence of those who care for the milk and cream and make the butter. The best time in all the year to obtain high scores for a large number of butters are the months of September and October. At that period cattle are neither stale nor fresh in undue proportion; they are still at pasture, and if frost has not seriously nipped the grasses, no serious consequences will result.

As it is good economy to feed some grain the entire year, our but-

ter-producer will consider what selection of food he will make. The farmer who grows all the cattle-food he consumes is lucky, since, if it is compounded with good judgment, he will have the best material for high-flavored butter: well-gotten hay, good rowen, corn ensilage and crushed oats, or cob meal and oats. The man who keeps more cattle than his farm will support must buy part or all of his grain-supplies. With him the question of selection is a very important one. Primarily, he must consider what is best for the health of the animal; and, second, what grain mixture will best serve his purpose for butter production. Besides, he must not neglect the item of cost. We must also temper our choice of foods with reference to their mechanical condition. In compounding rations from mill-stuffs, we must weigh carefully the effects of all the feeding materials on the flavor and body of the butter. It may be taken for granted that no single feeding-stuff which comes to us from the mills adds anything to the flavor of butter. Some of these will stiffen it, others will soften butter. In constructing a ration for cows from purchased foods, I recommend the following rule: For source of albuminoids, use two or more substances rather than one; and for more dilute forms of food elements, several coarse grains, rather than wheat bran only. Aim to get from 70 to 80 per cent. of light, bulky grain in your mixtures. To illustrate my meaning, I prefer the use of cotton-seed meal, linseed and gluten meals in proper proportions, and Chicago maize-feed or corn bran, with wheat bran, and crushed oats, if not too dear. These should be made up in about these quantities per hundred-weight:

Cotton-seed meal.....	10 pounds.
Linseed, coarse, meal.....	15 "
Gluten meal.....	10 "
Oats.....	15 "
Chicago maize-feed.....	25 "
Wheat bran.....	25 "
	100 "

This mixture can be fed in quantities to suit each animal's wants.

The tendency of cotton-seed meal, when used in large quantities, is to lower the flavor and unduly harden the butter. Besides this, cows become clogged and liable to garget, abortion and sterility. Coarse linseed meal has the opposite effect if fed in undue proportion. Gluten meal is valuable in moderate amount, when mixed with other suitable articles.

The effect of food and condition on the butter is, perhaps, most marked in midwinter, if the largest number of cows are stale, and cotton-seed meal and corn meal are fed. The butter is low in flavor, and the body of the butter is extremely hard. Strippers give milk which produces a butter of low flavor, and harder than the butter of fresh cows. The use of foods like cotton-seed meal and corn meal rather aggravates the objectionable features in such butter. When a private dairy is in the unfortunate condition of having a majority of stale cows in midwinter, it is better to use all linseed meal in place of cotton-seed, and balance up with corn bran or Chicago maize-feed and shorts, and use as much corn ensilage or roots as he can afford. The succulent food will help the separation of the butter in churning.

Now in regard to the care of milk and cream preparatory to churning. If a separator is used on the farm, it will not be necessary to say anything more than separate while the milk is warm, and cool the cream to about the churning temperature and hold it there. If the cream is extra heavy, a temperature of 50° to 52° will not be found too low for churning; if it is thin cream, a temperature of 57° to 60° may be necessary, or even a higher one.

If the gravity system of separation is in use, the rule of setting the milk while still warm, at a temperature of 45°, will be good in this case. When skimmed, each collection of cream should be kept in a can in the creamer at the same temperature, until enough is obtained for a churning. When enough has been gathered, raise the temperature to 65° or 66°, and add a quart or more of buttermilk from a previous churning as a starter, unless you use John Boyd's plan of making a lactic acid culture from skim milk. When you are ready to churn, reduce your temperature one or two degrees, and have your work-room not less than 60° if you can. The right temperature will vary a little, as it will depend to some extent on the condition of the cows, and on their food. If much cotton-seed meal is used, a higher temperature is needed. If most of the cows are strippers, and you are using much cotton-seed meal, do not fill the churn more than one-third full, and add to your cream about five per cent. of water. The albuminous condition of the cream governs what Babcock has called its degree of viscosity; and this quality mainly determines the time required to churn. This feature is more pronounced in cream raised in the deep-set cans than in separator cream; indeed, little or no trouble is experienced now with separator creams. As between breeds, ex-

perience indicates that cows which yield butter of the highest melting points, require to have their cream churned at a higher temperature. It is also true that the time required to churn depends largely on the amount of butter suspended in creams of different qualities, as thin and thick creams.

Having discovered the right temperature for churning the cream, and the time required to churn, let us now deal with the next aspect of the work—when to stop churning. When the butter is about to separate, stop and wash out the particles of cream which have adhered to the cover of the churn, if it be one of the swing form. Continue churning till your granulation reaches the size of number six shot. Then add water, of the same temperature as the buttermilk, to the extent of about five per cent. of the volume of cream you started with; turn churn a few times. This will thin down your buttermilk and enable you to drain it more thoroughly. Then wash it by adding a quantity of water equal to about five per cent. more than the original volume of cream. Be sure to have this water not less than 60° in winter, and in summer not less than 50° nor more than 60°. The degree must depend on the temperature of the work-room and whether you finish the butter or reserve working it till next morning. If time and general convenience permit, I favor a thorough draining-off of the water in the churn for not less than ten minutes, and for an hour, if convenient. If the quantity of butter can be estimated to within a pound, or say two per cent. on a large quantity, the salt may be added at once, if the churn is a box, before removing the butter. In this way it can be more thoroughly incorporated. You may then remove the butter in large tubs, and set it away for twenty-four hours till it is worked, if the temperature of the butter-room does not fall below 60°. If the room is cold, finish it the same day. Very satisfactory work may be done by taking the butter out of the churn onto a worker, stir in the salt thoroughly while in the granular state, and work. If you want to win a high score at a fair, take time to do things well. When salt is evenly distributed in a sample of butter, it will carry more without being apparent; and butter properly salted and worked is never streaky or mottled, unless lumpy cream was used without a strainer.

The Chair—If there is no objection we will hear the report of the Commission on the Investigation of Tuberculosis now.

The report was then read by the Secretary, as follows:

You Are Viewing an Archived Copy from the New Jersey State Library

REPORT OF THE COMMISSION TO INVESTIGATE THE
EXISTENCE OF TUBERCULOSIS, ACTING UNDER
LAW PASSED MAY 22, 1894.

You Are Viewing an Archived Copy from the New Jersey State Library

REPORT OF THE COMMISSION TO INVESTIGATE THE
EXISTENCE OF TUBERCULOSIS, ACTING UNDER
LAW PASSED MAY 22, 1894.

First. As to the appointment of the Commission.

The President of the State Board, Hon. Edward Burrough, appointed as members of the Commission Messrs. Isaac W. Nicholson, Camden county; Chas. Howell Cook, Somerset; H. V. M. Dennis, Monmouth; Dr. Jos. B. Ward, Essex, and Dr. Wm. C. Parry, Burlington, with the President and Secretary of the State Board, who are made members of the Commission by the act.

The Commission were called together in the office of the State Board of Agriculture, July 24th, and organized by electing Edward Burrough, President; Chas. Howell Cook, Vice President and Treasurer; Franklin Dye, Secretary.

Second. The Commission first proceeded to outline a course of action under the law within the limitations prescribed therein.

Under the rules adopted they decided to procure all available information on the question of tuberculosis in animals and results of the tests made to discover its existence, by the use of Koch's lymph, up to the present time. The Secretary was directed to open correspondence with other similar Boards and Commissions, with Experiment Stations and the United States Bureau of Animal Industry at Washington, to secure all available reliable literature bearing on the question.

For the scientific work of the Commission, the State Biologist, Prof. Julius Nelson, of the State Agricultural College, was employed, and his report of analyses made, cattle examined, &c., will accompany this report.

The Commission also decided to employ competent veterinarians in different parts of the State, as occasion might require, to make physi-

cal examinations and assist in the autopsies of cattle condemned to be slaughtered.

The Commission acknowledge the efficient aid of the State Dairy Commissioner in co-operating with them in the work undertaken. A number of herds were brought to the attention of the Commission, at their request, by the State Dairy Commissioner, as follows :

1. Where sanitary and feeding conditions are positively bad.
2. Where sanitary and feeding conditions are good, but where close inbreeding has been practiced on pure-bred animals.
3. Natives where natural conditions are observed both in reference to feeding and shelter.

A number have since been added by the Commissioner and by the State Board of Health, and some requests have come from farmers and dairymen to have their herds examined and tested. Not all of these applications have as yet received attention. Below we cite a number of sample cases examined by the Commission and showing the conditions which were found to exist.

The first herd subjected to the lymph test was that of the State Hospital at Trenton, consisting of forty-eight cows and one bull. Here the Commission secured the consent of the Managers of the State Hospitals before doing anything. As this is a State institution, this course was thought to be the best for obvious reasons. The herd was chosen as a starting point, first, because it belonged to the State; second, because from all appearances it was a typically well-kept herd. The management throughout was exceptionally good. The buildings, according to recent demands, were all that could be desired, the entire business being under the efficient superintendence of Col. W. H. Earley. The herd was separated into three divisions for injection, so as not to interfere with the milk-supply any more than it was possible to avoid. Of the total number (forty-nine) injected, twenty-eight responded to the test by giving the required rise of temperature. Of this number, twenty-seven have been slaughtered. Of those slaughtered all but one gave clear evidence of tuberculous trouble, some of them in an aggravated form, others in a much less advanced stage. Of this herd it should be said it was made up of grades of most of the prevailing breeds, and a number of them over six years old, many of which had been purchased from others. The next

REPORT ON TUBERCULOSIS.

257

herd examined, and believed to be tuberculous, was near Plainfield. The conditions surrounding this herd were not of the best. It consisted of nineteen cows and one bull, the latter having actinomycosis (or lump jaw) in an advanced stage. The whole herd was injected. There were two responses. The bull and the balance of the herd gave no response. Of those not responding one was slaughtered on suspicion of being diseased, and the autopsy proved the judgment of the veterinarians to be correct. The condition of all those slaughtered in this herd was such as to justify the course pursued. Again, in Morris county, six cows, greatly reduced in flesh owing to scanty feeding, were believed by the local veterinarian to be tuberculous, as one of the herd had died from the disease in the early spring. The cows were injected, and gave no reaction suggestive of tuberculosis. But they were slaughtered for the purpose of investigation. The autopsies to the unaided eye gave no evidence of the disease.

Another herd of ten, chiefly Jerseys, near Linwood, was injected at the request of the owner. These cows were fairly well cared for and fed. Not one gave a suspicious response to the lymph test.

Another herd of twenty-nine cows, near Lebanon, Hunterdon county, was examined both at the request of the owner and of the Dairy Commissioner. The investigations in this herd are not yet completed.

Again, by request of the State Board of Health, ten cows in Montclair were examined, the Montclair Board of Health fearing that a child in the vicinity had contracted "tubercular meningitis" from the use of the milk supplied by this dairy. The herd was injected, and one case only gave suspicious reaction. It was slaughtered, and the autopsy showed unmistakable evidence of tuberculosis.

Another herd of twelve cows, near Stoutsburg, was examined and injected at the request of the owner. Work in this herd is not completed at this date.

A herd of about forty cows, near Morristown, was tested early last spring by the owner, and some twenty-seven were condemned and slaughtered, all of which were tuberculous in some degree. The owner has since applied to this Commission to have his herd, numbering twenty-eight, re-tested. This was recently done and three only gave the required reaction, and they were slaughtered and all were found to be tuberculous. The owner claims he had no trouble from tuberculosis until it was introduced by purchased cows.

MILK AS FOOD.

We realize that milk is a complete human food, and nature's most perfect *natural liquid food*, and we therefore believe every reasonable precaution should be taken in reference to its production, handling and sale, so that no point shall be left unguarded that may jeopardize its purity and healthfulness. To this end not only should the cow be healthy, but she should be kept in healthful conditions, and those who handle the milk should be scrupulously clean and careful. So all milk receptacles and utensils should be frequently and thoroughly cleansed. No milk, either by producer or *consumer*, should be left exposed in an atmosphere vitiated by any contagious disease, as it is a well-known fact that typhoid, scarlet fever and diphtheria have been communicated by the absorbent qualities of the milk.

THE COMMISSION.

It is the judgment of the Commission that this method of supervision should be continued on the same careful and conservative lines as now begun, obtaining all possible information and making careful, legitimate experiments in order to protect our State from assaults of radical measures affecting our dairies and dairy products.

POWERS INCREASED.

In this connection we suggest that the powers for dairy inspection be largely increased, so that stated physical examinations of all herds supplying our towns and cities with milk shall be made by competent veterinarians, and all cattle found to be diseased shall be slaughtered, particularly such as are found to have diseased udders. Such periodical investigations should also cover the sanitary arrangements of stables, character of food and other matters of importance connected with the healthfulness of both the cows and their products. On this point the late Dr. Ezra M. Hunt said in his report to this Board, page 236, 1893-94: "In regard to milk there is also much difference of opinion as to the risk unless the udder of the cow has become affected. There is, however, a growing belief that no cow affected with tuberculosis in any form should be in a dairy, and that people should, by proper inspection, be assured of safety from any risk in the use of milk."

REPORT ON TUBERCULOSIS.

259

CERTIFICATES OF EXAMINATION.

In connection with such examination, a certificate, stating that such herd has been subjected to the required legal examination, should be furnished the owner, both for his protection and for the satisfaction of the consumers of milk.

This inspection is also of the greatest importance from the producer's standpoint. It must be remembered that the existence of the disease in a member of the herd may, it is claimed, sooner or later inoculate the whole number. The immediate removal of such animals, while a temporary loss, will surely result in a gain in the end, compensation being made, as now, by the State.

As to the existence of the tubercle bacilli in milk in every case of tuberculous cows, the investigations on this point by scientists are not conclusive, but enough is demonstrated to show there is danger from using milk of cows having diseased udders. That there are numerous other sources, however, by which this disease may be communicated to the human family is admitted by all who have carefully investigated the general question, and the part such possible contributing agents may play as to the origin of any given case of human tuberculosis should be most carefully investigated, especially when there is reasonable ground for suspicion. The cow should not be charged with the sins of others—enough that she be condemned for her own. Another matter which should not be overlooked is the probable communication of the disease to the bovine from the human. We believe no consumptive person, with the disease advanced, should have charge of dairy cows or take part in the handling of milk that is for others' use. If, as asserted, by science, this death-dealing germ is expectorated by persons as well as animals, there is cause for more care against possible spread of the disease, which Dr. D. E. Salmon says is "the most widespread and destructive plague that affects man or domesticated animals."

SCIENTIFIC INVESTIGATIONS.

The scientific, microscopic and biological investigations of animals slaughtered by this Commission are being made, as previously stated, by Prof. Julius Nelson, the Biologist of our State Experiment Station. Such investigations are necessarily slow and tedious. When

these are completed they will be published with this report.* Whether they will add anything new to the investigations already made by him and so many others on the scientific side of this important question, remains to be seen. Certain it is that scientists are not yet agreed on all the questions connected with this whole subject, but further research will no doubt in time demonstrate more clearly those points which are now in debate.

(Signed) D. D. DENISE, President, Freehold P. O.
CHAS. HOWELL COOK, Vice President, Trenton P. O.
FRANKLIN DYE, Secretary, Trenton P. O.
WILLIAM C. PARRY, M.D., Hainesport P. O.
H. V. M. DENNIS, Freehold P. O.
ISAAC W. NICHOLSON, Camden P. O.
JOSEPH B. WARD, M.D., Lyons Farms P. O.

Commission.

Mr. Burrough—This matter has attracted a great deal of attention all over the State, and I think the information on the subject should be published, and a copy of the report be furnished to each member of the Committee on Legislation when appointed.

Mr. Betts—What is the power of this Commission under the present law? What is the limit of their power? I am not quite posted.

Mr. Dye—I would state that the Commission only have power to act when requested to do so by the Dairy Commissioner, or by two members of the State Board of Health, or by the owner of the suspected animals. They cannot do anything without that.

Mr. Betts—I notice the Commissioners recommend that they be given additional powers. What powers are sought by this Commission in that application?

The Secretary—It requests that additional powers of dairy investigation be granted. It is thought advisable that dairy cows be periodically examined.

Mr. Betts—I am opposed to the passage of any arbitrary measure that will subject a farmer's herds to the tuberculin test, at least under the present history and stage of the practice of testing. I have given some attention to this matter during the last three years, and if this Commission seeks the same powers as those now being exercised in the State of Massachusetts, I am opposed to it.

* The report of Prof. Nelson not being ready at the time of going to press is necessarily omitted.

Mr. Cook—We say most positively a “physical examination.”

Mr. Betts—I have no objection to a proper examination ; I am in favor of an examination, and hope the farmers of this State, and dairymen especially, will receive an education in the care of stock, and of their own herds, that will be of lasting benefit to them. Such, I believe, will be the result if the subject is discussed in all its bearings. But if it is presented to us under the claim that science has demonstrated any particular method as conclusive and decisive, then I am opposed to it until we are further educated, and until, with all due respect to men who claim to be scientific, they are further educated. In reading carefully on this subject, we find that these gentlemen who made the loudest claims upon their knowledge of curing, or preventing, or of arresting the prevalence of this disease, are acknowledging to-day their mistakes. They are doing it to-day all over the country, and I think the report of this Commission shows that they are convinced the course such men have pursued is of doubtful wisdom, and it has been doubted by our wisest men for a long time. I believe if this matter were followed up, and these tests were continued on the line spoken of, as in the past, it would set our dairy interests back fifty years by the destruction of the best animals in this country. It has taken more than one hundred years to produce the best specimens of the dairy cattle of this country. I have seen a good many publications issued from pretty high sources which have aroused some little feeling on my part. It seemed to me the purport of them, or the wish, was to educate public sentiment to favor a method which was, to say the least, of doubtful wisdom. There is too much of the unknown quantity about this—an unknown quantity in the effect that it will have permanently on the cattle themselves in these tests. I know the State pretty well, and I believe the cattle of the State were never healthier than they are to-day. I also believe that this discussion, if carried on properly, with a view to getting at the truth of the matter, will result in their being still healthier. But it will not be by tuberculin. We must begin at the bottom, and, instead of destroying the cattle we do not know are diseased, we must improve them in every possible way.

Mr. Roberts—We are in a state of investigation. This Commission does not say it shall or shall not use certain things, but they confine themselves to the request that their privileges be enlarged. They are anxious that their powers shall be extended so that they can make

physical examinations of the cattle of the State, and I think they should be given this power.

Mr. Betts—I approve of that.

Mr. Abbott—I have, at my own expense, placed the forty-five or fifty herds of cattle supplying me with milk under veterinary supervision during the past three years. At present these examinations are made quarterly. They embrace a physical examination, and when a suspicious animal is found, the testing by tuberculin or her rejection from the herd. The certificates rendered by the veterinarians relate not only to the health of the cattle, but also to the cleanliness and ventilation of the stables, the purity of the water-supply, health of the milkers, &c.

I feel that it is time for the State to move in this matter, and I think that the dairymen of the State have cause to be thankful that their interests are in the hands of agriculturists, rather than in the hands of Boards of Health, for you will surely be dealt with fairly by them, while if by some of the Boards of Health I should be extremely sorry for you.

One word to you, as a dealer in the city of Philadelphia. This agitation is having a serious effect on the amount of milk consumed in the cities, and this means less money to go into the pockets of the near-by dairymen. We should recognize this fact. As agriculturists, I would encourage you to proceed on the line proposed in the report, for it is in the right direction. We must endeavor to remove from the minds of the public the idea that milk is unwholesome. Confidence must be re-established in order that consumption should become what it should be. It therefore seems to me that the enlarged powers which the Commission have asked for should be granted, as there is likelihood that such action as has been taken by the Philadelphia Board of Health a few months since may be repeated.

If we let them exercise their authority, and thus to object to the use of milk from cows that have not been tested with tuberculin, we shall have much greater trouble than under the proposition of the Commission. I think the action of the Board of Health was extremely unwarranted and dictatorial, and we want to guard against further action of this kind.

By all means make application to the Legislature for some provision whereby this Commission may be authorized to look after the health of herds of dairy cattle and the condition of their surround-

ings, and to issue certificates for the same, so that if the question comes up in the cities such certificates of the health of herds may be obtainable.

If we proceed as here outlined, I believe that the reaction in public sentiment that has set in against the promiscuous use of tuberculin will be such as to support the dealers of Philadelphia in their contention, that the physical examination is sufficient, and that milk from herds so examined in good faith and with reference to their surroundings will be admitted to market in spite of the edicts of unreasonable Boards of Health.

It is certainly within the province of the Legislature in any event to foster this great foundation industry of the State, *i. e.* dairying, and to render needed aid to the farmers in placing their products in their markets of the States, by giving assurance of their wholesomeness and excellence.

Mr. Betts—My friend Abbott has misunderstood me. I acknowledge I was a little full of this matter, but I did not intend in any way, directly or remotely, to reflect on this Commission. I admire all of them, and they are the right men in the right place. I merely want to express the opinion that public sentiment has been created too much in the wrong direction, but I favor the Commission and would like to see them given the additional power they ask for.

Mr. Cook—We have had the writings on this subject of the best authorities in this country, and of some foreign countries, and we have their experience as a guide, and their faults as a warning. What this commission has tried to do is to get at the facts of the matter, from a business standpoint first, and also from a scientific standpoint secondly. We want to give a pure supply of milk to our citizens, and we believe the ideas expressed by Mr. Abbott are fully in accord with those of the Commission. We believe that an increase in the consumption of milk will result from applying proper restrictions. In Jersey City, Hoboken, and in other places, where they have swill-fed dairies, where there are cows with defective or diseased udders, resulting in diseased milk—there is where we claim the evil effects are found. If the dairy surroundings are as they should be there will be no such complaints.

The Treasurer of the Commission, Mr. Charles Howell Cook, then presented his report, showing that the Commission had expended for all purposes since its organization a little over \$800.

The State Dairy Commissioner, Hon. Geo. W. McGuire, having been invited to present a brief report of work and views in this connection, was then introduced and read the following paper.

Mr. McGuire—I had prepared my paper before I saw the report which has just been read by the Secretary of the Board, and I may repeat some things you have already heard.

BOVINE TUBERCULOSIS.

BY GEO. W. M'GUIRE, STATE DAIRY COMMISSIONER.

In view of the action taken by other States and the widespread impression that tuberculosis in cattle prevailed in some sections of the State, thereby injuring the health and lives of the people, the Legislature enacted a law, which was approved May 4th, 1894, providing for a commission of seven members to investigate the extent of the disease and granting them certain powers to cope with the same. My official relation to this law will be seen in the first section of the act, which says that "at the request of two members of the State Board of Health, or the State Dairy Commissioner, or the owner of suspected animals, the Commission on Tuberculosis shall investigate and enforce such measures as they deem proper." President Burrough, of the State Board of Agriculture, appointed the following gentlemen to serve on the Commission: Charles Howell Cook, William C. Parry, M.D., Isaac W. Nicholson, Esq., Joseph B. Ward, M.D., and H. V. M. Dennis; the President and Secretary of the State Board being made members of the Commission by the act. The Commission organized July 24th, 1894, and have been diligently at work ever since, performing the duties prescribed by the statute. President Burrough deserves credit for his wise selection of the men who are to deal with a subject that has provoked so much criticism for the past few years, and judging from the character of the work already performed, should the enforcement of the law remain in their hands, farmers and cattle breeders, and the consumers of milk, will be alike protected, and the public will be impartially and truthfully informed. At the first meeting of the Board a resolution was passed inviting the State Dairy Commissioner to meet with the Board and co-operate with them in their labors. I was subsequently requested to furnish from data already in my office a list of the dairies exhibiting the following conditions:

1. Where sanitary and feeding conditions are positively bad.
2. Where sanitary and feeding conditions are good, but where close inbreeding has been practiced on pure-bred animals.
3. Natives. Where natural conditions are observed both in relation to feed and shelter.

The large number of sanitary inspections of dairies made during the last two years enabled me to comply with the request. I detailed an inspector, however, to visit a considerable number of dairies in addition, in order to give the Board the information relating to such typical herds as they had desired. Great care was exercised to select such herds as would supply the most reliable and complete data.

Since that time I have requested the examination of other herds, but as the details of the work will appear in the report of the Commission, it is obviously unnecessary for me to go into details.

The Philadelphia Board of Health passed an ordinance during the past summer requiring all milch cows supplying milk in the city to undergo the tuberculin test, under penalty, in case of non-compliance, of declaring the milk unwholesome. This action by the above Board was considered in many quarters unjust. The dairymen in their own State, as well as those of New Jersey, protested against what they considered a very arbitrary proceeding.

There are conflicting opinions among the scientists who have studied the subject of bovine tuberculosis as to whether the use of tuberculin should be made a legal diagnostic. In other words, should any veterinarian be legally empowered to enter upon the premises of our dairymen, inject the lymph, and, on the strength of the evidence supplied by the tuberculin test, condemn a part or the whole of his herd?

In other States where laws exist for eradicating the disease by slaughtering all more or less tubercular animals (notably in Massachusetts), the result has proven to be disastrous to the dairymen. And such it promises to be until the State shall pay full indemnity to the owners and establish a system of quarantine against all cattle imported into that State. Do the facts warrant such extreme measures, when most of the highest authorities agree that the tubercle bacillus is seldom present in the milk, and only when the disease has invaded the udder?

Dr. Bridge, the veterinarian of the Pennsylvania State Board of

Agriculture, says : " While I advocate the use of tuberculin for the testing of herds for tuberculosis, I would not advise its indiscriminate use in every herd, nor is it necessary. Without it the badly-diseased could not be detected, yet there are herds where its use is not called for. Some herds average as high as fifty or one hundred per cent. of diseased, while others will not average more than one or two per cent., and others are absolutely free. If after a careful and thorough examination by a competent veterinarian the disease is found or suspected, it would be wise to test with tuberculin ; but where tuberculosis is not found or suspected, I would not counsel its use. Our knowledge of tuberculin as yet is imperfect ; in some cases it has been known to produce a rise of temperature where no tuberculosis existed, and in others gave no reaction in advanced cases of the disease. Therefore, until we are sure of our deduction from reactions of temperatures, errors will occur, and farmers suffer needless loss. The testing should be done with the greatest skill and caution. The dairymen have rights as well as the public. The milk from tuberculous animals is not so frequently infected as is supposed. Milk from animals in the earlier stages of the disease and with perfect udders does not contain tubercle bacilli. Therefore a careful physical examination, with the use of tuberculin, if it is thought necessary, will be sufficient, and will protect the public health."

The late Dr. Henry F. Formad, of the University of Pennsylvania, in commenting on the examination of the specimens from three tuberculous cows and one calf sent him by myself in June and July, 1891, including the udders and various samples of the milk from the same cows, remarked : " The tubercle bacilli being the established poison of tuberculosis, the observations in the three cases recorded conclusively prove that, in spite of tuberculosis of internal organs, the milk was not contaminated. The reason for this is, I think, that the udder is highly normal. I think that it is only when the udder is highly tubercular (which fact could be easily established in the living animals by examining the udder and its surroundings for enlarged lymph glands) there would be risk from the milk."

It has been proposed that the present examination of milk for adulteration should be supplemented by a bacteriological examination for the tubercle bacillus, on the supposition that such an examination in every case would be conclusive and satisfactory. But such is not the case, nor would the proposition have been made if the very dif-

ferent nature of the evidence obtainable by chemical and that obtainable by bacteriological examination had been more completely understood.

In the ordinary inspection directed usually to determining whether or not the milk is adulterated by the addition of water, or by the removal of cream, or by the aid of any foreign substance, a trained inspector is able, in the great majority of cases, to determine the fact of adulteration by the physical character of the milk. There then remains only a very limited number of cases in which it is necessary for him to take a proper sample and transmit it for a chemical analysis. Now, the processes of chemical analysis of milk are such as have been in use for many years; their accuracy has been verified by tens of thousands of analyses, and the testimony supplied by them is final and conclusive, and is accepted as such by dairymen, the public and by courts of law.

But the case is entirely different when the inspector is requested to examine milk for the existence of tuberculosis. He receives no help from the physical character and appearance of the milk. It may be rich and creamy-looking; it may have a sweet, pleasant taste; it may be normal in all respects, and have a large percentage of fat and solid substances. In short, it may be excellent milk so far as a physical and chemical examination can be made to extend, and yet contain the tubercle bacillus. Not being himself able to decide, the inspector would be compelled to submit a vast number of samples to the bacteriologist. Here, however, a still greater difficulty is encountered. The processes of bacteriology as applied in milk have been discovered only during the past few years. They have not been subject to the chemical proofs of accuracy necessary to establish their reliability in all cases. Only when the infection of the milk is well pronounced do they afford evidence which is reasonably conclusive, and which can be obtained by the expenditure of a limited amount of time. In the vast majority of cases, the bacteriological examination of the milk for the tubercle bacillus yields results which are either doubtful or negative. This is the case even after a great deal of time and infinite pains and precautions have been expended in conducting the examination. In fact, in these doubtful cases it is necessary to have recourse to the process of inoculation of a lower animal, like a guinea-pig, with a sample of the suspected milk, and then wait a number of weeks to see if the animal is attacked with the disease.

For these reasons, the inspection of milk must begin at the dairy, and must be intrusted to the veterinarian. If he finds that the disease has advanced to such a stage that the milk is liable to be affected according to the best knowledge we have on this subject at the present time, then the animal should be slaughtered and the owner indemnified. If, on the contrary, he finds animals in a condition of less-advanced disease, he would have to decide in each particular instance what would be the wisest course to pursue. Practical action should certainly never be taken until the scientific information within our reach warrants it, and just at present we are waiting for the light which the investigations of the Commission and other sources will provide us.

In the meantime, the surest way to reach a perfect milk-supply, in my opinion, is by a canvass of every dairy farm in the State, and, in case the results warrant it, a proper certificate of dairy inspection should be made out for a definite time by the Dairy Commissioner—the same to embrace the physical condition of the cattle as determined by a competent veterinarian, the quality of the food and water-supply, and the hygienic condition of the general surroundings. Such certificate of dairy inspection would prove of great value to the dairymen on the one hand, and would guarantee to the public that the inspection had been begun where in all cases it properly should—with the animals in the dairy.

On motion, a vote of thanks was extended Mr. McGuire for his valuable paper.

CONTAGIOUS DISEASES OF ANIMALS.

—

BY EZRA M. HUNT, M.D., SECRETARY OF THE STATE BOARD
OF HEALTH.

You Are Viewing an Archived Copy from the New Jersey State Library

CONTAGIOUS DISEASES OF ANIMALS.

At the beginning of the year 1894 we were able to report an unusual exemption from those contagious diseases of animals with special reference to which the laws as to animal diseases were committed to the charge of this Board.

The deliverance from contagious pleuro-pneumonia had continued, glanders was much less frequent than for some time past, and cases of swine plague were reported from very few localities.

During the present year the same exemption has been fully maintained, except in respect to glanders. Outbreaks of this disease continue to occur from time to time. Because of the facility with which dealers make exchanges, and of the fact that horses suffering from this or its allied disease, farcy, can often be worked for some time, the contagion is apt to be spread from one locality to another. Fortunately, the disease is one which is seldom or never contagious except from direct contact or from exposure of abraded surfaces to some discharge of the disease. It finds its chief center in the stables of railway companies, or where a large number of horses are closely kept. The wise provisions of the law have been well followed up, and in some cases we have had valuable aid from city Boards of Health. It is often necessary to trace animals from one place to another. It also not infrequently occurs that cases are reported to us which upon examination prove to be some other form of disease. In January and February, the most of the cases that occurred were in Essex county. The details of actual cases are sufficiently given in the veterinary reports. Horse-owners are becoming more and more familiar with the gravity of the disease, and with the legal risks they run if cases are not reported and disposed of.

It has not been found necessary in this State to resort to the use of mallein, which is claimed to aid in testing as to the reality of cases. As a rule, the diagnosis is not difficult. We believe that the legislation as to it is quite complete. While cases will continue to occur so

long as large numbers of horses come to us from city stables, experience has shown us that we are not likely to have any increased prevalence of the disease. If prompt report, isolation and slaughter are secured, we are not likely to have extension from any single case that occurs.

Premises, harness, &c., need to be carefully disinfected and then the quarantine can usually be brief.

During March last we had report of some cases in the southern part of the State, but careful examination showed how often suspicion may mislead. About the same time our attention was called to frequent cases of blindness occurring among horses in Monmouth county.

We refer to such cases because there is need for dealers generally to understand that the State is not attempting to supply free treatment for various diseases, or to encourage the report of such diseases without there is some evidence of contagion. Usually some local veterinarian should have seen the case and given his judgment whether there is need of seeking State aid.

The question is often presented to us whether the State should not pay for horses that it orders to be destroyed. Here and there a State or a country provides for this. As a rule, however, most States take the ground that the owner of a glandered horse is maintaining a nuisance, and that it is his duty to abate the nuisance without compensation. This is the same rule that is applied in many like cases where the State enforces laws against nuisances, where, as in the case of contagious pleuro-pneumonia, which was a foreign and invading disease, it sees fit to give partial compensation, it does it on the ground that expediency and the public welfare justify special provision for a special emergency.

In March, April and May single cases were reported to us here and there, but most of them were easily disposed of. The efficient way in which the Newark Board of Health co-operates with the special State authority given by law to the State Board of Health as to glanders, saves much in time and expense, and it should be adopted by all city boards at least. It is only in cases of difference of opinion as to diagnosis, or where immediate destruction and disinfection are delayed and a formal written quarantine is necessary, that the special aid of the State is invoked. In all other cases notice is promptly given to the State Board, so that any additional precautions deemed necessary may be taken. These are seldom needed.

May and June some cases occurring at Hoboken were troublesome, because of a desire to use horses that had been stabled on premises close to a glandered horse, but it was not found necessary to invoke the special process of law. As a rule, owners, so soon as they understand the law, are ready to co-operate with us. Nearly every case of delay arises from the proposal of some veterinarian to treat the disease, whereas it is admitted to be incurable by all skilled practitioners. Prompt destruction is alike in the interest of the owner and the public. The law has had a most salutary effect, and is more easily executed than formerly, and we look forward to the time when cases will be very rare in the State. We again refer to the reports of the local veterinarians for details.

Since June 1st of the present year we have not found it necessary to designate any special inspector as State Veterinarian for the Board, but have employed those of recognized ability and experience in this and other animal diseases as has been needed.

TUBERCULOSIS AMONG CATTLE.

Tuberculosis among cattle continues to attract great attention. This arises from various causes.

1. The medical profession is actively discussing the communicability of tuberculosis, with both professional and public opinion inclining to magnify its communicability. This includes the advocacy of the view that bovine tuberculosis is communicable from animal to animal, and from the meat and milk to man. By analogy the dried sputa of animals, or other dried secretions, might also impart the disease to man.

2. Veterinarians have, as a rule, thrown their influence and opinion on the side of alarm as to the communicability of this disease. There is a strange absence of such statistical facts as are enough in numbers and arrangement to amount to proof. There is also an absence of methods of testing the experiments of observers and of various other conditions, which alone make of facts such science as is true and such treatment as is effectual.

3. There is much statement as to the increase of tuberculosis among cattle that is not supported by certified statistics. It is overlooked that the disease has not been infrequent so long as there have

been systems for keeping cattle continuously in stalls, so depriving them of proper exercise, ventilation and other health conditions.

4. Great attention has been excited by the discussions which are taking place as to the value of tuberculin as a special method for diagnosing the presence of tuberculosis.

5. There are extended discussions as to how often tubercle bacilli are found in the meat of animals and in the milk, and as to how far it is possible for slight tubercular ailments to exist in cattle without the manifestation of these either in milk or meat.

These are, many of them, great and grave questions, giving wide opportunity for the indulgence of speculation, for opinions, for vast talk and abundant writing, but still standing greatly in need of such accumulation of facts and counter-facts as are indispensable, if we would have real science and sustained practice founded thereupon.

At the meeting of the State Board of Agriculture, January, 1893, the Board had had full consultation therewith, and expressed itself in favor of urging the general government to action, and as ready to co-operate in any methods for more extended investigation. Several plans were before the Legislature. The result was a law which authorized a special commission, appointed by the State Board of Agriculture, for some special investigations as to this disease. In the meantime, both the State Board of Health and the Dairy Commissioner have pushed forward their work under the general law and under the special Cattle and Dairy law of 1893, besides their usual attention to cases of tuberculosis. They have also been in co-operation and, when necessary, in consultation with the Commission. It is believed that the reports of each of these will be found to contain much of interest and for the future guidance of the State.

All cases of tuberculosis which are reported to the State Board of Health are at once referred to the Commission. There has been prompt attention given in every case, and there is no doubt but that much useful work will be accomplished both in the line of investigation and in securing valuable statistical data.

NEW JERSEY
STATE AGRICULTURAL SOCIETY.

THIRTY-SEVENTH ANNUAL REPORT.

For the Year Ending December, 1894.

You Are Viewing an Archived Copy from the New Jersey State Library

OFFICERS FOR THE YEAR 1895.

PRESIDENT.

E. B. GADDISNewark.....Essex county.

VICE PRESIDENTS.

HON. N S RUECream Ridge Monmouth county.
HON. WILLIAM J. SEWELL.....Camden.....Camden county.
H. HEYWARD ISHAMElizabeth Union county.
WM. L. TOMPKINS NewarkEssex county.
AMOS CLARKElizabethUnion county.

TREASURER.

WM. A. CLARK.....Elizabeth.....Union county.

RECORDING SECRETARY.

THOMAS W. DAWSON.....NewarkEssex county.

CORRESPONDING SECRETARY.

P. T. QUINNNewark.....Essex county.

GENERAL SUPERINTENDENT.

WM. L. TOMPKINSNewarkEssex county.

MEMBERS OF THE EXECUTIVE COMMITTEE

E. B. GADDIS, H. H. ISHAM, W. L. TOMPKINS, H. P. JONES,
G. B. JENKINSON, CHAS F. KILBURN, P. T. QUINN,
WM. A. CLARK, THOS W. DAWSON.

BOARD OF DIRECTORS

1. HON. N. S. RUE.....Cream RidgeMonmouth county.
2. HON. AMOS CLARKElizabeth Union county.
3. P. T. QUINN Newark.....Essex county.
4. COL. W. A. MORRELLElizabeth Union county.
5. JOSEPH COLYER.....Newark.....Essex county.
6. HON. H. C. KELSEY.....Trenton.....Mercer county.
7. THOS. T. KINNEY.....Newark.....Essex county.

STATE BOARD OF AGRICULTURE.

8. E. B. GADDIS	Newark	Essex county.
9. WM. L. TOMPKINS	Newark	Essex county.
10. HENRY P. JONES	Newark	Essex county.
11. HON. WM. J. SEWELL	Camden	Camden county.
12. GEO. B. JENKINSON	Newark	Essex county.
13. CHAS F. KILBURN	Newark	Essex county.
14. FRANKLIN MURPHY	Newark	Essex county.
15. H. HEYWARD ISHAM	Elizabeth	Union county.
16. CHAS B. THURSTON	Jersey City	Hudson county.
17. HON. JAMES SMITH, JR.	Newark	Essex county.
18. P. SANFORD ROSS	Newark	Essex county.
19. THOS. W. DAWSON	Newark	Essex county.
20. HON. WM. J. KEYS	South Branch	Somerset county.
21. DENNIS LONG	Union	Union county.
22. A. V. SARGEANT	Raritan	Somerset county.
23. HON. G. KRUEGER	Newark	Essex county.
24. CHARLES AYERS	Metuchen	Middlesex county.
25. JOHN F. DRYDEN	Newark	Essex county.
26. WM. T. HUNT	Newark	Essex county.
27. HON. SILAS C. HALSEY	Newark	Essex county.
28. GEO. F. PERKINS	Jersey City	Hudson county.
29. WM. A. CLARK	Elizabeth	Union county.
30. HON. HENRY J. IRICK	Vincentown	Burlington county.

CORRESPONDING SECRETARY'S REPORT FOR 1894.

To the Stockholders of the State Agricultural Society :

GENTLEMEN—It affords me very great pleasure to present to you for your consideration a brief outline of what has been accomplished by this Society for the year just closed, and covering the thirty-sixth annual exhibition held during the first week in September, 1894.

In the opening of this report, it is a great pleasure to announce that our Society is one of the few that at the close of the year could show a balance on the right side of its ledger. This is the more remarkable when we are all aware of the depressed condition of all branches of industry throughout the length and breadth of our country for the past two years. Agriculture and horticulture, in fact all of the husbandman's calling, none of its varied branches escaped from the general depression. Besides these hard times and stagnation in business, the prices of most of the staples broke all previous records in low prices, and we had during the year the unparalleled phenomenon of wheat selling at a lower price per bushel than Indian corn. The spring months of the year 1894 gave every outward indication of a bountiful harvest of all kinds of farm and garden crops. But these signs failed to crystallize, and early in the summer a protracted drouth set in, which extended over a wider area of the country than any previous drouth of which there is a record. In sections of our own State devoted to mixed husbandry, no rain amounting to anything fell for terms ranging from sixty to ninety days, during which time the soil was parched with a broiling sun burning up vegetation from the face of the earth. The loss to the farmers of the State is incalculable. In one instance which came under my observation, a small fruit farm, the gross sales for a number of consecutive years amounted to about \$8,000 ; the sales the past season

were a trifle less than half of the sum named. The expenses are just the same on such a farm whether there is a full or only half a crop. It is only too apparent, from reports received from different sections of our State, that the experience cited is the sad experience of thousands of fruit and vegetable-growers in our own and other States. Early in the month of April a severe black frost destroyed all of the peach buds in Delaware, Maryland and other Southern States. Fortunately the peach buds in Hunterdon, Warren and Morris counties were not harmed, and a full crop and fair prices gladdened the hearts of the owners of the orchards. But this was but a small bit of sunshine, compared with the widespread damage to other crops raised in this State. The potato crop, an important one in New Jersey, the yield was not more than half, and the quality was so far below the standard that they sold from a quarter to half a dollar lower per barrel than first-class stock. What are classed as small fruits suffered most, for they depend on plenty of moisture to bring them to full size. In fact, the past season has been a dismal one for the tillers of the soil in New Jersey, and it is fair to surmise that the receipts did not cover the expenses, and large sums will have to be credited to profit and loss, the last-named being the heaviest item.

In the face of all these discouraging circumstances, the officers of this Society, which you elected a year ago, went to work with a determination to make the thirty-sixth annual exhibition equal, at least, if not superior, to any of its predecessors, and those of you who were fortunate enough to visit Waverly Fair Grounds during the week of the exhibition, cannot help bearing testimony that it was such a show that Jersey men and women were warranted in feeling proud of this exhibition of State products, especially in such a bad season. Every department was filled to overflowing, and the judges were taxed heavily to get through with their laborious work in the allotted time. In fact, the exhibition as a whole was a pleasant surprise to the crowds of visitors, all of whom left the grounds well pleased with their visit. To accomplish such results means hard work systematically arranged, and matured judgment in carrying out all the details, which are multitudinous in character. To do all that is required to bring about such results, calls for experience, well-laid plans, good judgment and rapid dispatch in carrying of these plans to completion. I would be remiss in my duty as a chronicler of this Society, if I did not mention the fact here, and in connection with

what I said about the arduous labor entailed, if I do not say that our President, E. B. Gaddis, spared neither time nor labor to make the Fair a grand success. But while he was ably aided by the Executive Committee, who are justly entitled to liberal praise, still each member of this committee will warmly indorse what I have said about our competent and thoroughly efficient President. The preliminary work was attended to in all its details, and at the same time with very noticeable economy. It is doubtful if there is an agricultural society in this country managed with more economy than the New Jersey State Agricultural Society.

In the early part of the last season, the matter of constructing a new grand stand was placed in the hands of the Executive Committee, with power. The committee examined the matter with great care, and had plans and specifications made for such a structure, but considering the stagnation still existing in all branches of industry, the committee thought it wise and prudent to postpone this improvement, which would cost from \$20,000 to \$25,000, for another year. The committee were of the unanimous opinion that this improvement was necessary, and, with a brighter and more promising outlook for business, it is to be hoped that a new and commodious grand stand will be built before the annual exhibition to be held at Waverly the first week in September, 1895.

The change in the date of holding our annual Fair from the third to the first week in September, started in 1893, was again a success in 1894. The weather for the two seasons was almost perfect, and besides the opening day of the Fair, "Labor Day," being a general holiday, brought hundreds to the grounds, and aided largely to make the exhibition a financial success. This success can, without doubt, be largely increased if our full Board of Directors would take a more active part in supervising the different departments during the Fair week. It would serve a practical purpose, and further the interests of the Society and broaden its influence if each department had for its superintendent a member of the Board of Directors, and all of the committees were made up from the same board, and also that each member of the board should spend two or three days on the grounds during the week of the Fair. There is no question but that the success of an agricultural society depends to a large extent on the undivided efforts of its Board of Directors. Every individual exhibitor should be visited by a committee of the Board of Directors during

the exhibition, and if such exhibitors have any grievances, see that they are adjusted then and there. It is very important, in the management of any society, that the exhibitors should leave the grounds with a feeling that they have been fairly and justly dealt with. In this connection, and of equal importance, is the subject of judging exhibits. It is one of the subjects that has not as yet been fully decided whether it is best to have three judges, or resort to experts and have only a single judge. The latter method seems to be gaining favor, especially in and among the Western societies, and judging from my own experience, I am free to say that employing experts and paying a fair compensation, and a single judge will give more satisfaction to exhibitors than the old-fashioned method of having two or more judges for the same class. In a society the size and extent of ours it is no easy task to secure the services of eighty or ninety competent persons, from various parts of the State, to come to Waverly and work hard for one or more days in making awards, especially where there is so much competition.

It is but fair to say, however, that for the last three or four years complaints from exhibitors have been growing less each succeeding year, which is proof that the judges were selected with special care as to their fitness to judge intelligently.

It has always been the policy and practice of this Society to prohibit gambling or pool-selling on the grounds during the week of the Fair. The Society has repeatedly refused large cash offers for such gambling privileges, and now, when the laws of the State prohibit such and make them criminal offenses, our Society feel that, while they lost large sums of money in the sale of such privileges, they now have some pride in stating the fact that their uniform course was the right and proper one to follow, and that eventually the mass of our people would heartily indorse this course.

The Horse Department was in charge of Mr. Charles Bassina, and he is entitled to warm praise for the way in which his department was managed. He gave satisfaction to exhibitors as well as to the Society. The entries exceeded any previous exhibition both in number and quality. In the three separate classes the total number of horses in 1893 was 371, while in 1894 there were 520, being an increase of 149 animals.

Mr. Charles Ayres managed the Cattle Department with his well-known skill, and all of the exhibitors left the ground well pleased,

STATE AGRICULTURAL SOCIETY. 283

feeling that they had been fairly dealt with, both by the Society and judges. The subjoined is a table showing the different breeds, number of herds, bulls and cows, which were on exhibition.

NEAT CATTLE.			
	Herds.	Bulls.	Cows.
Ayrshires.....	2	10	14
Devons.....	...	8	16
Guernseys.....	2	17	25
Jerseys.....	3	16	27
Holsteins.....	3	14	22
Shorthorns.....	1	11	18
Herefords.....	...	4	8
Swiss.....	...	8	11
Grades.....	4	...	36
Total.....	15	88	177

The sheep and swine were again in charge of Mr. Dennis Long, who has served the Society faithfully for so many years. The following list gives the breeds and number of each on exhibition :

	Rams.	Ewes.
Dorset.....	10	20
Merinos.....	22	28
Cotswolds.....	8	6
Leicesters.....	6	12
Hampshires.....	7	12
Southdowns.....	20	24
Shropshires.....	12	12
Lincolns.....	5	8
Oxfords.....	15	12
Total.....	105	134

SWINE.		
	Boars.	Sows.
Berkshires.....	12	15
Cheshires.....	5	4
Essex.....	4	4
Jersey Reds.....	5	6
Large Whites.....	10	16
Small Whites.....	11	16
Poland Chinas.....	5	7
Victorias.....	5	6
Total.....	57	74

The Poultry Department was an attractive feature of the exhibition. All of the classes were well filled by well-bred birds, and it taxed the judges' best ability to decide on the merits in awarding the prizes. The Superintendent of this department, T. F. Rackham, managed the department with skill, having a thorough practical knowledge of all matters relating to raising and judgment of poultry. It is needless to say that Mr. Rackham discharged his duties faithfully and gave thorough satisfaction to the officers of the Society.

In this department the building is too small to accommodate the large number of entries, and there is no question but that the building should be enlarged at an early day. It is one of the improvements on the grounds that is sadly needed. The exhibitors, as well as the visitors, would appreciate such a change.

The exhibition of agricultural implements and labor-saving farm machinery was a great deal larger, with more variety and more novelties than it was at the previous exhibitions. This department always interests practical farmers, and our Society should use their best efforts to get the large manufacturers from the East and West to show their manufactured stock at the Waverly Fair Grounds, and if possible, make this department even more attractive in the future than it has been in the past.

The officers of the Society, as well as the visitors, were more than pleased with the large and handsome display of carriages and farm and business wagons. The department has grown under the careful management of H. B. Enders, who has had charge of it for the past three years.

The domestic and manufactured goods shown in the main building were fully up to the highest standard of excellence, both in variety and superior quality of the goods exhibited. This is equally true of the Bread and Butter Department, and it is pleasant to announce that there was a larger show of home-made products than usual.

Under the intelligent and skillful supervision of S. C. Halsey, the Art Department has grown in size and improved in the character of the exhibits, until now it is one of the most attractive features of the annual exhibition. With additional room, and the quarters better equipped for displaying the works of art, this department will grow in size and interest each succeeding year.

Notwithstanding the long and disastrous drouth of the past summer, which seriously damaged farm products all over the State, still

the Horticultural Department, in the variety and quality, was a great success. Experts of fruits and vegetables were astonished and pleased to witness such a display at Waverly. It was the wonder of the exhibition. It is doubtful if it could be equaled in any State east of the Rocky Mountains.

In order to show how the entries in the different departments have increased from year to year, I present the following table, taken from the entry-books from 1874 to 1894, inclusive. The point that I am most anxious to call your special attention to is the fact that in 1874 the total entries were, in round numbers, 2,400, and in 1894 they amounted to about 8,000, and two years ago they ran over this number. With this increase, the office expenses of the Society are no more now than they were twenty years ago.

In 1894 the entries were 743 more than they were in 1893, and the Society paid out in 1894 nearly \$16,000 in cash premiums.

TABLE OF ENTRIES FROM 1874 TO 1894.

SHOWING THE STEADY PROGRESS AND GROWTH MADE IN ALL DEPARTMENTS.

DEPARTMENT.	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894		
Special State.....	59	70	106	106	148	124	170	146	149	106	155	140	129	126	132	116	136	110	95	118	138	Horses, cattle, sheep, swine.	
Speed.....	52	98	105	99	98	149	.....	103	126	107	66	107	104	175	124	152	147	200	85	169	279	Speed.
Department A.....	107	72	68	73	76	78	109	62	75	46	.....	74	78	88	89	90	106	76	83	84	103	Horses.
Department B.....	392	431	683	715	818	757	950	933	887	845	984	972	1187	1160	1321	1647	1843	2585	2313	1644	1709	Cattle, sheep, swine, poultry.	
Department C.....	817	961	1005	1456	1140	1763	1697	1492	1467	1913	1998	2027	1882	1595	2061	1431	1677	2578	2413	1658	2314	Farm products.	
Department D.....	548	701	705	1416	946	702	1122	1091	1021	1182	1269	1118	1258	1296	1318	1634	1619	1711	1355	926	1281	Ladies' needlework, &c.	
Department E.....	164	182	233	256	291	415	540	793	521	477	639	720	818	715	1012	856	904	711	922	673	874	Canned goods, honey, &c.	
Department F.....	32	154	139	207	192	263	275	232	207	338	219	321	324	176	219	158	105	90	135	114	98	Farm machines, tools, &c.	
Department G.....	69	72	16	40	47	23	49	50	50	57	83	94	64	88	103	95	96	103	87	88	125	Carriages, wagons, &c.	
Department H.....	} 29	52	36	37	211	204	{	86	64	52	57	34	39	35	46	77	73	58	32	49	55	Household furniture, woolen goods.
Department I.....									121	83	85	112	102	110	127	165	111	123	118	62	52	105	Manufactured goods.
Department K.....	97	114	115	136	214	142	177	133	255	300	219	355	380	412	416	435	460	594	500	503	683	Fine arts, &c.	
Department L.....	81	97	88	140	159	15	34	72	77	35	60	49	40	39	40	50	*	*	.....	.....	.....	Sanitary appliances
Department M.....	.....	.....	.....	.....	.....	.....	.....	.....	35	16	24	37	39	31	45	52	28	50	52	60	106	Dairy goods.
Total.....	2447	3004	3249	4681	4129	4687	5491	5394	4967	5559	5885	6184	6296	6063	7140	6904	7317	5984	8139	6138	7823		

* Included in figures given for Department I.

This table gives in a concise form the growth of the Society's business for the past twenty years, and it further shows that the Society's work has stimulated rivalry in every branch of the husbandman's calling. It is to be sincerely hoped that in the future, as has been the case in the past, our successors will follow the same wise and conservative policy which has been approved by the citizens in every part of the State, and further, that to be a member of the Board of Directors will always be looked upon as an honor to our best representative citizens.

P. T. QUINN,
Corresponding Secretary.

You Are Viewing an Archived Copy from the New Jersey State Library

TREASURER'S REPORT.

For the Year Ending December 31st, 1894.

GENERAL ACCOUNT.

RECEIPTS.	
Balance January 1st, 1894.....	\$1,401 00
From railroad admissions, 1893.....	\$210 70
From Driving Association, balance rent, 1893.....	150 00
From Driving Association, rent, 1894.....	300 00
From track rent, 1894.....	100 00
From track tickets, 1894.....	25 00
From stall rents, 1894.....	201 00
From sundry items.....	64 26
	1,050 96

FAIR ACCOUNT, 1894.	
From gate admissions.....	\$10,996 80
From grand stand.....	1,064 75
From infield.....	89 75
From railroad admissions.....	2,865 10
From special privilege.....	1,900 00
From stand rents.....	5,181 45
From speed entries.....	3,907 50
From Society entries.....	1,061 35
From hostlers.....	122 00
From coat-room.....	44 85
From telephone.....	13 05
From programme.....	182 92
From sundries items.....	22 35
From premium account.....	5,270 00
	32,721 57

DISBURSEMENTS.	
For ground account.....	\$764 60
For general account.....	3,364 65
For repairs and improvements.....	1,518 34
For Fair of 1894.....	6,743 21
For premiums.....	18,329 00
For dividend, 1894.....	3,600 00
	\$34,319 80
Balance.....	854 03

\$35,173 83

GROUND ACCOUNT.

Paid salary Overseer.....	\$500 00
Paid help on grounds.....	74 25
Paid help haying.....	69 59
Paid horse-keep.....	76 74
Paid horseshoeing.....	11 00
Paid wagon and tool repairs.....	9 80
Paid sundries.....	23 22
	<hr/>
	\$764 60

GENERAL ACCOUNT.

Paid township tax.....	\$286 00
Paid State tax.....	90 00
Paid office rent.....	200 00
Paid interest.....	60 00
Paid salaries.....	1,200 00
Paid National Trotting Association.....	50 00
Paid expense annual meeting.....	195 00
Paid expense quarterly meetings.....	75 35
Paid Treasurer's office expenses.....	42 41
Paid Secretary's office expenses.....	177 01
Paid sundry expense.....	428 05
Paid account previous Fairs.....	132 43
Paid insurance, three years.....	428 40
	<hr/>
	\$3,364 65

REPAIRS AND IMPROVEMENTS.

Paid new buildings.....	\$1,069 54
Paid repairs.....	433 65
Paid whitewashing.....	15 15
	<hr/>
	\$1,518 34

PREMIUM ACCOUNT.

Paid State premiums, 1893.....	\$2,885 00
Paid speed premiums, 1894.....	5,900 00
Paid Society premiums, 1894, Department A.....	1,000 00
Paid Society premiums, 1894, Department B.....	4,086 50
Paid Society premiums, 1894, Department C.....	1,076 50
Paid Society premiums, 1894, Department D.....	244 00
Paid Society premiums, 1894, Department E.....	114 50
Paid Society premiums, 1894, Department I.....	114 00
Paid Society premiums, 1894, Department K.....	228 50
Paid Society premiums, 1894, Department M.....	115 00
Paid bicycle premiums, 1894.....	25 00
Paid diplomas, medals, &c.....	155 00
Paid State premiums, 1894.....	2,385 00
	<hr/>
	\$18,329 00

STATE AGRICULTURAL SOCIETY.

FAIR, 1894.

Paid advertising.....	\$641 75
Paid signs and posters.....	433 00
Paid bill-posting.....	330 40
Paid tickets	267 88
Paid special attractions.....	545 28
Paid entertainment.....	292 08
Paid refectory.....	401 92
Paid police and watchmen.....	340 25
Paid music.....	160 00
Paid collecting stand rents.....	312 00
Paid speed department.....	656 52
Paid judges' expenses.....	114 37
Paid superintendents and help.....	389 00
Paid general help.....	193 39
Paid entry department.....	471 50
Paid Treasurer's expenses and help—gatemen and ticket sellers.....	399 25
Paid Recording Secretary's expenses and supplies.....	251 28
Paid telephone.....	32 40
Paid erecting tents.....	100 00
Paid straw.....	201 51
Paid sundry supplies and expenses.....	209 43

\$6,743 21

DIVIDEND ACCOUNT.

Paid dividend, 1894.....	\$3,600 00
--------------------------	------------

\$3,600 00

You Are Viewing an Archived Copy from the New Jersey State Library

REPORT OF THE SPECIAL STATE PREMIUM COMMITTEE FOR 1894.

The Special State Premium Committee held their regular meetings on December 11th and January 9th. There were present Governor George T. Werts, Henry I. Budd, I. W. Nicholson, A. L. Holcombe, Henry P. Jones, P. T. Quinn and Thomas W. Dawson.

In conformity with the act of 1874, the committee then proceeded to make diligent and careful examination of the list of awards in all departments, as made by the judges at the Thirty-sixth Annual Exhibition of the New Jersey State Agricultural Society, held at Waverly Park, September 3d, 4th, 5th, 6th and 7th, 1894, and also the statements and proofs for competition on farm crops, fruits and dairy products.

You Are Viewing an Archived Copy from the New Jersey State Library

SPECIAL STATE PREMIUMS FOR THE YEAR 1894.

List of awards in all departments, as made by the judges at the Thirty-sixth Annual Exhibition of the New Jersey State Agricultural Society, held at Waverly Park, September 3d, 4th, 5th, 6th and 7th, 1894 :

SECTION 1.—HORSES.

Class 1.—Standard-Bred.

	First Premium.	Second Premium.
STALLION WITH ONE OF HIS GET—		
Flemington Stock Farm, Flemington, N. J.		
"Wm H. Vanderbilt".....	\$75 00	
John B Dusenberry, Newark, N. J.		
"Foremost".....		\$50 00
Very highly commended,		
T. E. Fogg, Long Branch, N. J.		
"King Rene, Jr."		
STALLION FOUR YEARS OLD AND OVER—		
Flemington Stock Farm, Flemington, N. J.		
"Cypress".....	£0 03	
T. E. Fogg, Long Branch, N. J.		
"Tony V.".....		25 00
STALLION THREE YEARS OLD AND UNDER FOUR—		
J. V. N. Willis, Marlboro, N. J.		
"Lord Egbert".....	40 00	
Flemington Stock Farm, Flemington, N. J.		
"Ra Bas".....		20 00
BROOD MARE WITH FAMILY OF ONE OR MORE COLTS—		
T. E. Fogg, Long Branch, N. J.		
"Hazel Dell".....	60 00	
Flemington Stock Farm, Flemington, N. J.		
"Kate Berry".....		30 00

MARE FOUR YEARS OLD AND OVER—

T. E. Fogg, Long Branch, N. J.	
"Marie Ansel".....	\$40 00
John Jackson, Newark, N. J.	
"Villette".....	\$20 00

Class 3.—Hackneys.

STALLION FOUR YEARS OLD AND OVER—

C. F. Lawrence, Newark, N. J.	
"Sir George, 2d".....	\$40 00

MARE FOUR YEARS OLD AND OVER—

C. F. Lawrence, Newark, N. J.	
"Mariabana, 2d".....	40 00

Class 4.—Carriage and Coach.

STALLION FOUR YEARS OLD AND OVER—

O. P. Brown, Middlebush, N. J.	
"Wolverine Prince".....	\$40 00

STALLION THREE YEARS OLD AND UNDER FOUR—

C. H. Leonard, Parsippany, N. J.	
"Sabot".....	30 00
Judson Stiles, Newark, N. J.	
"Wick".....	\$15 00

BROOD MARE WITH FOAL AT FOOT—

T. E. Fogg, Long Branch, N. J.	
"Rightaway".....	40 00
Flemington Stock Farm, Flemington, N. J.	
By "Masterlode".....	20 00

FILLY THREE YEARS OLD AND UNDER FOUR—

J. N. Frome, German Valley, N. J.	
"Gold Dust Hamilton".....	20 00
James Dunn, Newark, N. J.	
"Katie".....	10 00

JAMES A. MARSHALL,
J. C. MCCOY,
GEO. H. MILLS,

Judges.

CATTLE.—SECTION 2.

Ayrshires.

HERDS, ONE BULL AND FOUR COWS—

Wm. Lindsay, Elizabeth, N. J.....	\$75 00	
J. O. Magie & Sons, Elizabeth, N. J.....		\$50 00

BULLS TWO YEARS OLD AND OVER—

Wm. Lindsay, Elizabeth, N. J.		
" Hendryx ".....	40 00	
J. O. Magie & Sons, Elizabeth, N. J.		
" Golden Boy ".....		25 00

COWS TWO YEARS OLD AND OVER—

Wm. Lindsay, Elizabeth, N. J.		
" Ayrshire Drummond ".....	40 00	
J. O. Magie & Sons, Elizabeth, N. J.		
" Belle Drummond ".....		25 00

Guernseys.

HERD, ONE BULL AND FOUR COWS—

Wm. Lindsay, Elizabeth, N. J.....	75 00	
Geo. La Monte, Bound Brook, N. J.....		50 00

BULLS TWO YEARS OLD AND OVER—

Wm. Lindsay, Elizabeth, N. J.....	40 00	
Geo. La Monte, Bound Brook, N. J.....		25 00

COWS TWO YEARS OLD AND OVER—

Jos. Krouse, Roselle, N. J.....	40 00	
Geo. La Monte, Bound Brook, N. J.....		25 00

Jerseys.

HERD, ONE BULL AND FOUR COWS—

Holly Grove Farm, Marconnier, N. J.....	75 00	
J. O. Magie & Sons, Elizabeth, N. J.....		50 00

BULLS TWO YEARS OLD AND OVER—

J. E. Holcombe, Flemington, N. J.		
" Handsome Pedro ".....	40 00	
Holly Grove Farm, Marconnier, N. J.		
" Maggie Sheldon's Pogis ".....		25 00

COWS TWO YEARS OLD AND OVER—

Edward Bodie, Freehold, N. J.		
" Carrie of St. Francis ".....	40 00	
J. O. Magie & Sons, Elizabeth, N. J.		
" Brambeletta, 2d ".....		25 00

298 STATE BOARD OF AGRICULTURE.

Holsteins.

HERD, ONE BULL AND FOUR COWS—		
A. A. Cortelyou, Neshanic, N. J.....	\$75 00	
A. A. Cortelyou, Neshanic, N. J.....		\$50 00
BULLS TWO YEARS AND OVER—		
H. Fulmer, Pennington, N. J.		
" De Goode's, 3d, Imperial ".....	40 00	
A. A. Cortelyou, Neshanic, N. J.		
" Clothilde's, 3d, Sir Netherland ".....		25 00
COWS TWO YEARS AND OVER—		
A. A. Cortelyou, Neshanic, N. J.		
" Klaasje ".....	40 00	
J. O. Magie & Sons, Elizabeth, N. J.		
" Consuello, 3d ".....		25 00

Short Horns

HERD, ONE BULL AND FOUR COWS—		
J. T. Field, Red Bank, N. J.....	75 00	
BULL TWO YEARS AND OVER—		
J. T. Field, Red Bank, N. J.		
" Sixth Duke of Monmouth ".....	40 00	
COWS TWO YEARS AND OVER—		
J. T. Field, Red Bank, N. J.		
" Mary Pitcher, 2d ".....	40 00	
J. T. Field, Red Bank, N. J.		
" Betsey, 2d ".....		25 00

Grades.

HERD, ONE BULL AND FOUR COWS—		
J. E. Holcombe, Flemington, N. J.		
Jersey bull and four grade cows.....	75 00	
H. Fulmer, Pennington, N. J.		
Holstein bull and four grade cows.....		50 00
COWS TWO YEARS AND OVER—		
H. Fulmer, Pennington, N. J.....	40 00	
D. B. Courter, Hilton, N. J.....		25 00

JOHN TELFER,
 J. ANDREWS CASTELLINE,
 H. C. GALE,
 J. O. COUCH,

Judges.

STATE AGRICULTURAL SOCIETY.

SHEEP.—SECTION 3.

Dorsetshire.

RAM TWO YEARS AND OVER—

R. Stuyvesant, Allamuchy, N. J..... \$20 00*

Leicester.

RAM TWO YEARS AND OVER—

R. Stuyvesant, Allamuchy, N. J..... 20 00

Cotswold.

RAM TWO YEARS AND OVER—

R. Stuyvesant, Allamuchy, N. J..... 20 00
 W. C. Addis, Delaware, N. J..... \$10 00*

Southdown.

RAM TWO YEARS AND OVER—

W. C. Addis, Delaware, N. J..... 20 00
 W. C. Addis, Delaware, N. J..... 10 00*

Shropshire.

RAM TWO YEARS AND OVER—

R. Stuyvesant, Allamuchy, N. J..... 20 00
 Jeremiah McCain, Mt. Hermon, N. J..... 10 00*

Oxfordshire.

RAM TWO YEARS AND OVER—

Jeremiah McCain, Mt. Hermon, N. J..... 20 00
 W. C. Addis, Delaware, N. J..... 10 00*

JNO. TELFER,
 G. W. MILLIKEN,
Judges.

SWINE.—SECTION 4.

Jersey Red Boar.

W. C. Addis, Delaware, N. J..... \$15 00

Large White Boar.

W. C. Addis, Delaware, N. J..... 15 00
 J. E. Holcombe, Flemington, N. J..... \$10 00*

Small White Boar.

Wm. Lindsay, Elizabeth, N. J..... 15 00
 Jeremiah McCain, Mt. Hermon, N. J..... 10 00*

300 STATE BOARD OF AGRICULTURE.

Essex Boar.

Wm. Lindsay, Elizabeth, N. J.....	\$15 00	
Wm. Lindsay, Elizabeth, N. J.....		\$10 00

Cheshire Boar.

James A. Long, Irvington, N. J.....	15 00	
James A. Long, Irvington, N. J.....		10 00

Berkshire Boar.

W. A. Seward, Budd's Lake, N. J.....	15 00	
W. Lindsay, Elizabeth, N. J.....		10 00

J. B. BRIGGS,
Judge.

DAIRY PRODUCTS.—SECTION 5.

BUTTER PACKAGE—

Thirty pounds dairy, made at any time.

A. V. Howe, Red Bank, N. J.....	\$15 00	
---------------------------------	---------	--

BUTTER—DAIRY IN PRINTS, ROLLS OR MOULDS—

Not less than fifteen pounds.

Mrs. J. A. Slingerland, Pequannock, N. J.....	10 00	
A. V. Howe, Red Bank, N. J.....		\$5 00

WM. H. DU BOIS,
Judge.

By Statements.

For the best income of milk from dairy of ten cows, verified by statement of expenses and mode of treatment.

W. B. Lippincott, Hartford, N. J.....	\$50 00	
Aaron L. Collins, Fellowship, N. J.....		\$25 00

For the best product of butter from dairy of five cows, verified by statement and mode of treatment.

Isaac Collins, Jr., Moorestown, N. J.....	40 00	
---	-------	--

FARM CROPS.—SECTION 6.

FIVE ACRES OF WHEAT (straw considered)—

John H. Denise, Freehold, N. J.....	\$25 00	
-------------------------------------	---------	--

FIVE ACRES OF CORN (stalks considered)—

H. V. Howe, Superintendent Brookdale Farm, Red Bank, N. J.,	25 00	
Horace Roberts, Fellowship, N. J.....		\$15 00

FIVE ACRES TIMOTHY HAY (weight must be given)—

John H. Denise, Freehold, N. J.....	25 00	
H. V. Howe, Supt., Red Bank, N. J.....		15 00

STATE AGRICULTURAL SOCIETY.

FIVE ACRES CLOVER HAY, FIRST CROP (weight must be given)—		
H. V. Howe, Supt., Red Bank, N. J.....	\$25 00	
J. B. Briggs, Stillwater, N. J.....		\$15 00
ONE ACRE WHITE POTATOES—		
David L. Ballinger, Moorestown, N. J.....	25 00	
J. B. Briggs, Stillwater, N. J.....		15 00
ONE ACRE SWEET POTATOES—		
Aaron L. Collins, Fellowship, N. J.....	25 00	
Isaac Collins, Jr., Moorestown, N. J.....		15 00
ONE ACRE CABBAGE (late)—		
David L. Ballinger, Moorestown, N. J.....	20 00	
H. V. Howe, Supt., Red Bank, N. J.....		10 00
ONE ACRE CABBAGE (early)—		
Chas. B. Jessup, Cinnaminson, N. J.....	20 00	
W. B. Lippincott, Hartford, N. J.....		10 00
ONE ACRE MANGEL-WURZEL—		
H. V. Howe, Supt., Red Bank, N. J.....	20 00	
J. B. Briggs, Stillwater, N. J.....		10 00
ONE ACRE TURNIPS—		
J. B. Briggs, Stillwater, N. J.....	20 00	
ONE-QUARTER ACRE PARSNIPS—		
H. V. Howe, Supt., Red Bank, N. J.....	20 00	
ONE ACRE CARROTS—		
H. V. Howe, Supt., Red Bank, N. J.....	20 00	
ONE ACRE TOMATOES—		
Wm. H. Du Bois, Jr., Freehold, N. J.....	20 00	
Isaac Collins, Jr., Moorestown, N. J.....		10 00
ONE ACRE ASPARAGUS—		
John J. Quinn, Newark, N. J.....	20 00	
Chas. B. Jessup, Cinnaminson, N. J.....		10 00
ONE ACRE WATERMELONS—		
Nathan H. Conrow, Cinnaminson, N. J.....	20 00	
ONE ACRE CANTELOUPES—		
Nathan H. Conrow, Cinnaminson, N. J.....	20 00	

FRUITS.

HALF-ACRE PEACHES—

John J. Quinn, Newark, N. J..... \$25 00

HALF-ACRE PEARS—

Wm. R. Ward, Newark, N. J..... 25 00

HALF-ACRE APPLES—

Geo. W. Jessup, Cinnaminson, N. J..... 25 00

Nathan H. Conrow, Cinnaminson, N. J..... \$15 00

HALF-ACRE GRAPES—

Geo. W. Jessup, Cinnaminson, N. J..... 25 00

HALF-ACRE STRAWBERRIES—

Roman Smith, South River, N. J..... 25 00

Wm. R. Ward, Newark, N. J..... 15 00

HALF-ACRE CURRANTS—

John J. Quinn, Newark, N. J..... 25 00

Wm. R. Ward, Newark, N. J..... 15 00

On motion, the above awards were approved, and it was

“ *Resolved*, That the check due for the Special State Premiums for the year 1894, to be received from the State, be drawn to the order of the Secretary of the Special State Premium Committee, Thomas W. Dawson, and that he be and is hereby authorized to receipt for the same, and that a certified copy of this resolution be filed with the State Comptroller.”

Adopted.

GEORGE T. WERTS, Chairman,
 HENRY I. BUDD,
 I. W. NICHOLSON,
 A. L. HOLCOMBE,
 HENRY P. JONES,
 P. T. QUINN,
 THOMAS W. DAWSON, Secretary.

REPORT
OF THE
STATE GRANGE OF NEW JERSEY
PATRONS OF HUSBANDRY.

You Are Viewing an Archived Copy from the New Jersey State Library

REPORT OF THE STATE GRANGE.

BY JOHN T. COX, MASTER.

Mr. President and Gentlemen of the State Board of Agriculture—I take pleasure in again presenting the annual report of the New Jersey State Grange, Patrons of Husbandry.

During the past year three new subordinate Granges have been organized and one re-organized.

The growth of the Order in some sections of the country has been remarkable. In one county in Pennsylvania, for instance, fifteen (15) new Granges were organized in less than two weeks' time, with an aggregate membership of six hundred and ninety-one (691).

It has become well understood now that the Grange organization is thoroughly established, that it rests upon a solid basis, and is capable of being made the instrument of great good to the farmers of our land. The Grange is ever ready to offer a helping hand in the interest of progressive agriculture. Its purposes are right, so it can afford to be open-handed and magnanimous in fostering and promoting education, in advancing civilization in farm life, in the purposes and accomplishments of agricultural schools and experiment stations.

Social culture, too, is one of the great objects of the Grange. This means social improvement, and surely the cultivation of an element so beneficial in its influence is most important.

We were not created to live alone, or to shut ourselves up in a dungeon of exclusiveness. So in the Grange we open wide the door of true, warm-hearted, spontaneous friendship. This is the lesson of fraternity so beautifully taught in our Order.

We recognize the social features of the Grange as among the very best; local friendships are formed, social pleasures are increased as the Grange is made a debating club or literary society; here we dis-

cuss the important problems of the day ; here we educate ourselves and our children to meet these issues, for we would not lose sight of the fact that the life of this nation and its destiny will soon be in the hands of those who are depending upon the teachings of this generation. There is here a responsibility that ought to be appreciated more than it is.

We in our Order have taught the farmer that has come within the ray of our influence to give up riding hobbies. He is not so selfish and narrow-minded as he used to be ; he looks beyond the bounds of his own home-farm, and finds that there are other people in the world besides himself. And this influence is not confined to the men of the farm alone, but to the women, the boys and girls as well.

In the Grange hall woman stands as the equal of man. She can handle the gavel ; she can vote, and in voting display her discriminating intelligence ; she can guard the approaches, and perform with becoming dignity all the duties that a refined society would place upon her. Do not shudder when I say that in the Grange we are educating and elevating woman to fill her proper and exalted sphere in life.

The Grange has been foremost in advocating free mail delivery in rural districts, and our organization, and I believe the farmers in general, are surely not in sympathy with Postmaster-General Bissell when he declares that "free delivery in rural districts is not needed or desired by the people." The farmers do need it ; they have been emphatic in their demands for it, thus showing their desire for it, and his position in general upon this question is only tenable upon the flimsy excuse that the outlay of money is not justifiable.

The arguments of fearless and able champions in refutation of his assumptions, it is not necessary for me to rehearse in this paper ; you all know how absolutely groundless are these pretensions. And in this demand for free delivery the farmer only asks for justice and equality ; give one class no greater advantages than other classes, but give them the very same advantages. And this Postmaster-General, too, sees fit to set at defiance the acts of Congress in the direction of free delivery extension by refusing to spend the money appropriated for this specific purpose.

Why is it that men in high position seem to take delight in betraying the interests of the common people ?

Members of our Order understand thoroughly well that there is

neither protection nor free trade, free silver or monometalism, in the Grange. And we think it is a cause of regret that these questions have become so imbued with partisanship. These characteristics of partisanship could be easily eliminated by the creation of non-partisan commissions, authorized to prepare schedules and plans for the government of the nation. Such commissions would give proper hearings to all classes alike, showing the *same consideration* to all.

Under such a system the wool-grower would receive the same recognition that the woolen manufacturer received. Is not absolute injustice done under the present system that protects the manufacturer of woolen goods and not the manufacturer or grower of the wool? It surely is not right to compel the farmer to pay a tariff duty on woolen goods that ought to be made out of the wool *he grows*, but are not so made because foreign wool is admitted free. The farmer is either entitled to the same measure of protection, or else to the same measure of exemption from taxation.

I apprehend that the Grange in New Jersey has been of great benefit to the State Board of Agriculture. These two organizations, working in harmony in this and other States, have done much to promote beneficent legislation, and to awaken the farmers to a clearer conception of their duties and responsibilities in reference to their calling.

The Secretary of the State Grange will file our official roster with your Board.

Respectfully submitted,

JOHN T. COX.

You Are Viewing an Archived Copy from the New Jersey State Library

STATE GRANGE OF NEW JERSEY,

PATRONS OF HUSBANDRY, 1895.

OFFICERS.

Master.....	JOHN T. COX.....	Readington, Hunterdon county.
Overseer.....	GEORGE W. JESSUP.....	Cinnaminson, Burlington county.
Lecturer.....	DAVID S. ADAMS.....	Mickleton, Gloucester county.
Steward.....	EDMUND BRADDOCK.....	Medford, Burlington county.
Assistant Steward.....	GEORGE W. F. GAUNT.....	Mullica Hill, Gloucester county.
Chaplain.....	FRANKLIN DYE.....	Trenton, Mercer county.
Treasurer.....	CHARLES COLLINS.....	Moorestown, Burlington county.
Secretary.....	M. D. DICKINSON.....	Woodstown, Salem county.
Gate-Keeper.....	E. E. HOLCOMBE.....	Mt. Airy, Hunterdon county.
Pomona.....	NETTIE WELLS.....	Bradevelt, Monmouth county.
Flora.....	KATE B. LIPPINCOTT.....	Hartford, Burlington county.
Ceres.....	HANNAH C. HOLCOMBE.....	Mt. Airy, Hunterdon county.
Lady Assistant Steward.....	CARRIE ATKINSON.....	Woodstown, Salem county.

EXECUTIVE COMMITTEE.

JOHN T. COX.....	Readington, Hunterdon county.
JAMES H. BAIRD.....	Marlboro, Monmouth county.
GEO. E. DE CAMP.....	Roseland, Essex county.
WM. B. LIPPINCOTT.....	Hartford, Burlington county.
THOMAS BORTON.....	Mullica Hill, Gloucester county.
M. D. DICKINSON.....	Woodstown, Salem county.

STATE GRANGE MEETS ON THE FIRST TUESDAY IN DECEMBER, 1895.

POMONA GRANGES.

MASTERS AND SECRETARIES, WITH ADDRESSES.

1. Burlington—Master.....WALTER SHINN.....Medford, Burlington county.
Secretary.....GEO. L. GILLINGHAM.....Moorestown, Burlington county.
2. Hunterdon—Master.....H. F. BODINE.....Locktown, Hunterdon county.
Secretary.....WILLIS RISLER.....Locktown, Hunterdon county.
5. Mercer—Master.....A. D. ANDERSON.....Trenton, Mercer county.
Secretary.....JAMES H. COX.....Ewingville, Mercer county.
6. Salem—Master.....CLARK FLITCRAFT.....Woodstown, Salem county.
Secretary.....EMPSON ATKINSON.....Woodstown, Salem county.

310 STATE BOARD OF AGRICULTURE.

8. Gloucester—Master.....GEORGE HOBNER..... Mullica Hill, Gloucester county.
 Secretary..... ANNA E. GAUNT..... Mullica Hill, Gloucester county.
 9. Center District—Master.....GEORGE E. DE CAMP..Roseland, Essex county.
 Secretary...D. A. HOPPINGHanover, Morris county.

COUNTY DEPUTIES

- At Large.....GEORGE W. JESSUP..Cinnaminson, Burlington county.
 Burlington. CHARLES DE COU.....Columbus, Burlington county.
 Camden.....AMOS EBERT..Ashland, Camden county.
 Cumberland WINFIELD S. BONHAM...Shiloh, Cumberland county.
 Essex.....AUSTIN E. HEDDEN..... Verona, Essex county.
 Gloucester.....WALTER HERITAGE.....Mickleton, Gloucester county.
 Hunterdon..... I. H. HOFFMAN.....Locktown, Hunterdon county.
 Mercer..... JOHN FLEMING..Pennington, Mercer county.
 Morris.LEO F. KITCHELLHanover, Morris county.
 Monmouth.....JOHN STATESIR.....Colts Neck, Monmouth county.
 Salem.....EMPSON ATKINSON.....Woodstown, Salem county.
 Somerset, Bergen, Pas- } J. B. ROGERS.1195 Broad street, Newark, N. J.
 saic and Middlesex... }
 Sussex.....NELSON DEWITT.....Deckertown, Sussex county.
 Union.....DR. JOSEPH B. WARD...Lyons Farms, Union county.
 Warren.....NICODEMUS WARNE.....Broadway,}Warren county.

SUBORDINATE GRANGES.

Number.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
5	Swedesboro.....	Wesley B. Gill.....	Swedesboro, Gloucester county.....	Emma C. Warrington.	Swedesboro, Gloucester county.
8	Moorestown	Gilbert Haines.....	Fellowship, Burlington county.....	Sallie S. Dudley.	Hartford, Burlington county.
9	Woodstown	Lippincott Coles.....	Woodstown, Salem county	C. French Moore	Woodstown, Salem county.
11	Vineland	R. G. Thompson.....	Vineland, Cumberland county.....	Mary H. Lee	Vineland, Cumberland county.
12	Ringoes	J. Q. Holcombe	Ringoes, Hunterdon county.....	Bessie D. Sked	Linvale, Hunterdon county.
14	Edgewood	N. S. Wright.....	Burlington, Burlington county.....	Edmund Cook.....	Burlington, Burlington county.
16	Hopewell.....	J. P. Ridgway.....	Shiloh, Cumberland county.....	W. S. Bonham	Shiloh, Cumberland county.
18	Cumberland	Frank H. Goodwin.....	Greenwich, Cumberland county.....	Morris Goodwin.....	Greenwich, Cumberland county.
20	Fenwick.....	Joseph H. Steward.....	Harmersville, Salem county.....	W. W. Patrick.....	Harmersville, Salem county.
26	Harrisonville.....	Chas. K. Horner.....	Harrisonville, Gloucester county	Mary B. Horner.....	Harrisonville, Gloucester county.
32	Bridgeport.....	B. Frank Bulon.....	Swedesboro, Gloucester county	Phebe Guest	Swedesboro, Gloucester county.
36	Medford	Aaron Darnell.....	Medford, Burlington county	Anna L. Engle	Lumberton, Burlington county.
38	Haddon	Wm. Graff.....	Ellisburg, Camden county	R. Lewis Shivers.....	Camden, Camden county.
39	Mantua	H. M. Leap.....	Wenonah, Gloucester county	Joseph Noblit	Wenonah, Gloucester county.
43	Hope	J. S. Glaspey.....	Bridgeton, Cumberland county	P. L. Wheaton.....	Bridgeton, Cumberland county.
46	Pedricktown	Howard G. Cooper.....	Pedricktown, Salem county.....	F. G. Sparks.....	Pedricktown, Salem county.
49	Rancocas.....	Not reported.			
50	Pemberton.....	Geo. W. Lundy.....	Mt. Holly, Burlington county.....	Henry R. Lippincott.....	Pemberton, Burlington county.
51	Mullica Hill.....	Aea Moore.....	Mullica Hill, Gloucester county.....	Wm. H. Munion,	Mullica Hill, Gloucester county.
56	Readington	W. H. Opie	Readington, Hunterdon county.....	Wm. Conet.....	Readington, Hunterdon county.
57	Center Grove.....	Wm H. Taylor.....	Millville, Cumberland county.....	John D. Zimmerman.....	Millville, Cumberland county.
58	Columbus	Robert Taylor.....	Columbus, Burlington county.....	G. Frank Harvey.....	Columbus, Burlington county.
60	Courses Landing.....	T. Newton Steward.....	Sharptown, Salem county.....	Henry Gardiner.....	Sharptown, Salem county.
61	Crosswicks.....	A. Satterthwait.....	Crosswicks, Burlington county	Elizabeth A. Rogers.....	Crosswicks, Burlington county.
64	Pennington	John Fleming.....	Pennington, Mercer county.....	Ira Stout.....	Pennington, Mercer county.
73	Ewing.....	A. D. Anderson	Trenton, Mercer county.....	James T. Cox.....	Ewingville, Mercer county.
77	Mercer.....	Geo. E. Weart.....	Stoutsburg, Mercer county.....	W. I. Phillips.....	Hopewell, Mercer county.
78	Wantage	J. L. Quick.....	Deckertown, Sussex county.....	S. M. Parcell.....	Deckertown, Sussex county.
79	Hamilton	Not reported.			

SUBORDINATE GRANGES—*Continued.*

Number.	NAMES.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
81	Friesburg	Warren W. Ware.....	Cohansey, Salem county.....	Kate S. Sigars.....	Friesburg, Salem county.
85	Williamstown....	Jacob Harper.....	Cross Keys, Gloucester county.....	C. F. Jennings.....	Sicklerville, Camden county.
88	Locktown	I. H. Hoffman.....	Baptisttown, Hunterdon county.....	Russie Risler.....	Locktown, Hunterdon county.
90	Blackwood	R. C. Morgan.....	Blackwood, Camden county.....	C. C. Stevenson.....	Blackwood, Camden county.
92	Monmouth	John H. Denise.....	Freehold, Monmouth county.....	D. Aug. Vandervere..	Freehold, Monmouth county.
98	Allentown	Not reported			
99	Liberty	J. H. Wyckoff.....	Holmdel, Monmouth county.....	S. B. Wells.....	Bradevelt, Monmouth county.
101	Sergeantsville....	N. B. Rittenhouse..	Sergeantsville, Hunterdon county.....	F. W. Venable.....	Sergeantsville, Hunterdon county.
104	Livingston	Wm. Diecks, Jr.....	Livingston, Essex county.....	J. H. M. Cook.....	Caldwell, Essex county.
105	Morris	Alex. M. Webb.....	Hanover, Morris county.....	Wm. F. Ely.....	Madison, Morris county.
106	Kingwood	T. W. Sutton.....	Barbertown, Hunterdon county.....	Alfred B. Butler.....	Frenchtown, Hunterdon county.
107	Caldwell	S. E. Harrison.....	Caldwell, Essex county.....	F. C. Gobel.....	Verona, Essex county.
108	Roseland.....	W. W. De Camp.....	Roseland, Essex county.....	Lillian De Camp	Roseland, Essex county.
109	Enterprise	Not reported.			
110	Warren	N. Warne.....	Broadway, Warren county.....	Sarah E. Simanton...	Broadway, Warren county.
111	Mickleton.....	Chalkley Haines...	Mickleton, Gloucester county.....	Ella H. Tomlin.....	Mickleton, Gloucester county.
112	Lyons Farms....	John H. Doremus...	Lyons Farms, Union county.....	David Doremus.....	Lyons Farms, Union county.
113	Pohatcong	D. C. Donnelly.....	Springtown, Warren county.....	Alonzo Sailer.....	Carpenterville, Warren county.
114	Musconetcong ..	J. A. Woolverton....	Asbury, Warren county.....	Lizzie Williamson....	Asbury, Warren county.
115	Hurffville	Walton H. Chew.....	Hurffville, Gloucester county.....	C. J. Davenport	Hurffville, Gloucester county.
116	Rocksburgh.....	A. C. Metler.....	Rocksburgh, Warren county.....	Warren Herman.....	Belvidere, Warren county.
117	Washington.....	Daniel Fitts.....	Washington, Warren county.....	Irwin D. Osman.....	Washington, Warren county.

REPORT

OF

Committee on County Board Reports.

REPORT OF COMMITTEE ON COUNTY BOARD REPORTS.

To the State Board of Agriculture :

The committee appointed to examine and condense the various reports of the Secretaries of the different County Boards of Agriculture have carefully considered the mass of information submitted to their inspection, and find a largely-increased interest manifested throughout in all matters pertaining to the advancement of agriculture.

It is pleasant to discover the evidences of increased usefulness of the County Boards, both as to the dissemination of knowledge and as to the careful collection and tabulation of the results of more intelligent experiment and practical work in one of the most ancient and honorable callings in the world.

The committee has endeavored to give a synopsis, so far as possible, from the reports received of the work accomplished by counties, as follows :

ATLANTIC COUNTY.

Has held two meetings, both of which were largely attended.

Resolutions indorsing the action of the last Assembly in the matter of good roads and urging the passage of a law applicable to this section of the State, were passed, and also a resolution for the enactment of a law for the destruction of insects injurious to vegetation.

Considerable interest was shown in the replies to the circular sent out by the State Board of Agriculture.

The past season is reported as disastrous, owing to unusual rains and drouths. The rains of late summer and early autumn benefited late crops and favored the growth of clover and other grasses and grain.

The area devoted to crimson clover is largely increased, and it proves to be a beneficial crop.

Hay yielded slightly below the average, but was secured in excellent condition. Potatoes, other vegetables and corn were below the average and prices were low. Small fruits did well and good prices were maintained.

Hog cholera prevails to some extent.

The excessive charges for railroad transportation are complained of.

The new School law is condemned on account of "centralizing power," "additional expensiveness," "inconvenience" and "incompetency."

BURLINGTON COUNTY.

Report is exhaustive, well arranged and of great interest.

The capriciousness of the past season is recalled with minute detail—storm, sunshine, flood and drouth, with a plague of insects, but cheering weather came with the hay and grain harvest.

The crop of hay is full average, finely cured, yet low in price. The succeeding pastures were much injured by the drouth.

Corn, when almost perishing, was saved by the early rains of autumn: with some exceptions, a good yield—about 80 per cent.; price, 55 cents, with rising tendency. Corn fodder was greatly diminished.

Crimson clover and other grasses look well.

White potato crop, though double in area, proved a poor return. On the other hand, sweet potatoes were unusually good, though not in very much demand.

Grains yielded fairly well, much being injured by the angoumois grain moth, and rendered unfit for flour.

Early tomatoes grew and sold well. The later varieties were an extraordinary yield, but sales, except when by previous contract, were difficult.

More than the usual quantity of vegetables was planted, but on account of drouth, Southern supplies and glutted market, the "truck" farmer, so-called, deplores the poorest season on record.

Of the fruits, apples were about 25 per cent., pears 80 per cent., of full average.

Peaches, with some notable exceptions, failed utterly. Irrigation has proved of value.

Small fruits and melons promised unusually well, but were generally damaged and failed in market returns.

Owing to dry weather milk should have commanded a high price, yet the average was from 2 to $3\frac{1}{2}$ cents.

Pork is gradually increasing in production; some cholera is reported.

Poultry-raising is not considered profitable, except to skillful breeders and fanciers.

The need of greater information and practical methods among farmers is touched upon.

Some extracts from correspondence are introduced relative to the School law, the increasing scarcity of farm help, the subject of tariff tinkering and kindred ills.

CAMDEN COUNTY.

Has held two regular meetings. A special meeting was devoted to the consideration of the relative values of milk; samples were submitted and analyzed by chemists during the progress of the meeting.

The feed and fertilizer questions were discussed with customary interest.

The subject of trolley roads demonstrated the fact that land-owners should be cautious in granting privileges to electric railroads.

President Nicholson, addressing the annual meeting, stated the necessity of economical management for months to come as a remedy for losses.

A course of lectures on botany was given by Professor Halsted, which was of great interest to the many ladies included among the audience.

Dairying continues to be important.

County Board rapidly extending its usefulness.

CAPE MAY COUNTY.

Has held three meetings. Prof. Voorhees and Prof. Smith, of the State Agricultural College, were present and delivered addresses.

With exception of sweet potato and the late tomato crops all other field, garden and orchard crops have suffered from unsuitable weather.

Statistics of crops compare favorably with other sections subject to similar conditions.

The results of the vegetable and melon crops are minutely given. Late tomatoes yielded $7\frac{1}{2}$ tons per acre. Prospective onion-growing for standard crop considered, and reported favorably.

Small fruits are as yet neglected.

Great expectations from growth of the crimson clover.

Dairying is yet undeveloped, no creamery is established and only one silo exits. Milk is sold at from 4 to 5 cents, wholesale. Much more attention is given to improved feeding.

There are no poultry establishments.

The usual complaints occur—scarcity of farm help, difficult marketing, hard times and low prices.

There is somewhat of sentiment in opposition to the new School law. The local trustee for each school is desired and advocated.

The report concludes with dissertations on the subject of crimson clover and lists of popular fruits and vegetables.

A meteorological statement, as observed at Woodbine, is appended.

CUMBERLAND COUNTY.

Report does not mention meetings held for any purpose whatever.

The same difficulties were encountered throughout the growing-season as reported from other parts, due to unpropitious weather, so that crops and prices were duly affected thereby.

The excessive rainfall in the early part of the season damaged the prospects of the market-gardeners and the dry weather affected all later growths.

The average success is far below an ordinary year, and the deficiency is severely felt in incomes already reduced below a paying basis.

This county abounds in canning establishments, having at least fourteen, and using therein the productions from 4,000 acres. The tomato crop so utilized was a fair one, and the price per ton was fortunately higher than for several years past.

The berry crop is also an important industry ; the crop was a good average.

A strawberry fair was held in Vineland on May 31st, under the auspices of the Board.

The peach crop was an entire failure ; very few new orchards are being planted and the old ones are fast disappearing.

REPORT OF COMMITTEE.

319

Less than half the former area of wheat is sown.

Farm labor is plentiful, but unreliable and inefficient.

Future prosperity is believed to depend more upon improved methods of cultivation and closer attention to business than to legislation.

The new School law is not much approved.

GLOUCESTER COUNTY.

Has held four regular meetings of the Board of Agriculture and one Farmers' Institute.

Some of the meetings were of unusual interest. The use of fertilizers, the School law and an inquiry into the causes of depression in agricultural pursuits were discussed.

Failure of crops, in whole or in part, occasioned by an unfavorable season, is reported and the consequent financial loss reviewed.

Early tomatoes, with few exceptions, were poor in quality and returns light.

The potato crop was a great disappointment; the crop was small and prices low.

Very much milk for market is produced, and, wherever sold to responsible dealers, affords the best and surest revenue.

HUNTERDON COUNTY.

Report indicates a very complete organization, for, in addition to the County Board, there are in active existence the Pomona and five subordinate granges, the two fruit exchanges and the Farmers' Alliance.

The representatives of these various bodies, with a few exceptions, are included in the County Board.

Three meetings have been held; the second, held in August, was in conjunction with the farmers' picnic and was largely attended. Hons. Edward Burrough and Mortimer Whitehead addressed the assemblage.

Of the grain crops, wheat and rye made a good yield. Oats were poor and corn almost a total failure. Buckwheat was scarcely worth cutting.

The potato crop was the smallest in years, and hay was variable in both quantity and quality.

Tomato-growing is on the increase.

Prices for all crops generally low.

The canning industry is in a prosperous condition, but still needs greater development, since in 1893 upwards of three-quarters of a million baskets of peaches rotted undisposed of. At least ten townships are adapted to this industry.

Of the fruits, cherries, blackberries and apples were about three-quarters, and strawberries and pears about one-half of usual yield.

Peaches were but little below the average, the shipments amounting to 1,514,453 baskets. The two peach exchanges did a most flourishing business at Pittstown, which is perhaps the greatest shipping point for peaches in the United States.

The crop netted \$600,000.

Bee-keeping has not been encouraging during the past season. The disease known as "foul brood" has made terrible ravages and threatens to terminate the industry. A law is needed for better protection, and resolutions on this subject are submitted for consideration by the State Board.

Dairying seems to be growing and paying. Two creameries and a bottling and shipping establishment are already in operation.

The Dog law is regarded as inoperative.

The new School law is not popular.

Action is requested for the suppression of noxious weeds.

MERCER COUNTY.

Board continues its activity in the agricultural, horticultural and live-stock interests in the county.

Regular meetings, with fair representative attendance, have been held, but too many farmers ignore the advantages afforded by these co-operative meetings.

The county, both as to climate, soil and products, is largely a type of the State; for in this county every product is grown that is usual in any other county, and the soils vary from the rich red soils of Stony Brook, stretching from Hopewell in the northwest and extending through Princeton township, merging into the fine gravelly loams

of West and East Windsor and Washington; while in parts of Washington and Hamilton the sandy soils are found.

The farmers, too, are progressive—another type of the State. Much of the produce of the county is marketed within its borders, owing to the demands of the city of Trenton and the large non-productive population in the State Schools in Trenton and other well-known schools elsewhere in the county.

The milk market of Trenton consumes over 10,000 quarts daily in addition to the cream and butter. Much of the latter is made in the county. On the line of the Reading railroad, shipments of milk are made daily to Philadelphia.

The Hopewell Creamery uses the milk from twenty dairies, consuming nine hundred quarts per day for the year.

There are three canneries in the county. The Hopewell Valley Canning Company has put up 293,000 quart cans of tomatoes, for which the farmers have received \$5,200 and operatives \$4,800. Tomatoes, \$6.38 per ton.

The Titusville Fruit and Vegetable Canning Company have packed upwards of 237,000 cans of tomatoes, 4,400 cans of raspberries, 2,600 of pears in glass jars. Tomatoes per ton, \$6.50.

The Hightstown factory packed 214,000 cans; paid farmers, \$6.50 per ton.

There were some adverse crop conditions, yet the yields have been good.

It is suggested that an amendment to the new School law be made, whereby each school shall have one local trustee, to be elected by his local school neighborhood. There is a good deal of dissatisfaction with the law as it now exists.

MIDDLESEX COUNTY.

Has held three meetings, at which were discussed: "How to protect fruit trees," "Electric railroads in rural sections," "The bright side of farm life," and the relative values of milk, hay and grain.

A lively interest was awakened.

Perhaps no county in the State has a greater variety of soils than Middlesex, which fact may, in a measure, account for some of the farmers being more prosperous than in previous years, and others being less so.

Labor is reported as scarce, both in the field and within the dwelling. Girls, especially, prefer town or city life.

The new School law is condemned by some, while approved by others.

MONMOUTH COUNTY.

Has as auxiliaries the Fruit Growers' Association and Monmouth, Liberty and Allentown Granges.

Regular meetings of the Board have been held quarterly.

Crops are generally reported as of good yield, with the exception of potatoes.

This is largely grown as a standard crop of the county, but this year it was adversely affected by the dry weather, and the price was disastrously low.

Special crop yields of various kinds by representative growers are reported.

Particular importance is given to the growth and shipment of asparagus and strawberries, and to the traffic in huckleberries—the latter amounting to \$30,000 and upwards.

The asparagus crop is estimated at 368,999 bunches, and is said to have put \$47,000 into the pockets of the growers.

Strawberries amounting to 24,319 bushels were grown and shipped from the neighborhood of Freehold alone, yielding to growers and pickers jointly a net return of \$53,037, of which \$37,473 was received by the growers.

There are seven canning factories established in this county and a large business is done—amounting to over three hundred tons of canned goods.

About six hundred operatives are now employed in this occupation and over \$60,000 is paid to farmers for the produce furnished.

Dairying is about stationary, with perhaps a slight increase in regions along the seaside.

All classes of people are more thoroughly aroused to the necessity of good country roads, such as can be built of the most readily-accessible material.

For road-building good gravel will continue to be the favorite surface, both for the country and the city users, as being generally smoother and more elastic and particularly as more convenient for repairing.

OCEAN COUNTY.

Has held five meetings, which were well attended and in which deep interest was shown.

The farm and garden crops were injured by the excessive high temperature and by the long-continued dry season.

Considerable space is given to the yield of salt hay of different varieties, which is estimated as producing annually 10,000 tons of hay, worth \$80,000.

The yield of wild berries picked and marketed is estimated at 20,000 bushels, giving a net return of \$36,500.

Swamp mosses are also gathered and shipped for use of city florists, and this has become quite an industry.

The cranberry crop is an important one.

Dairying has not yet assumed any importance as a business.

There are no canning factories in this county, which fact is to be regretted, seeing how great a quantity of wild and cultivated small fruits abound, and considering the great supplies of oysters and clams.

Oysters are shipped from the neighborhood of Barnegat at the rate of 1,500 bushels per month, and from Tuckerton alone 60,000 clams are shipped every working day.

The advantages of this county as a home for intending settlers are described.

The report is worth careful reading, and the county named is worth a more careful inspection, containing much good land, destined ere long to be redeemed from its native wilds.

SALEM COUNTY.

Has held four meetings during the past year.

The annual meeting, held January 23d, was followed by a Farmers Institute, conducted by the Secretary of the State Board.

C. E. Chapman gave an address on potato culture, Prof. J. B. Smith a lecture on entomology, and ex-Governor Hoard spoke on dairy cattle.

Beside these, other addresses were given, and the programme was well carried out. The institute was pronounced a success.

The second meeting was devoted to a consideration of the advan-

tages to be derived by spraying fruit trees, and the methods most successfully employed.

At the third meeting President Burrough spoke of the advantages to agriculture resulting from the late Columbian Exposition.

The report from Salem is at present fragmentary; much of the practical and statistical information being not yet received.

The Secretary seems to have been hampered by the delays of correspondents who were applied to for particulars.

SOMERSET COUNTY.

Has held four meetings and is in a thriving condition. Measured by the interest manifested in attendance on the meetings, the organization is proving itself a valuable aid.

The average attendance is one hundred persons, and the membership list is increasing.

The condition of the crops is reported as elsewhere throughout the State, mainly unfavorable for corn and vegetables.

Farm labor is scarce and unreliable.

The attractions of town life and the presumably easier occupations of railroad and factory employ entice many from rural pursuits; female help is becoming scarcer year by year.

Many persons advocate the growing of grass as a special crop.

Crimson clover is much approved of both for hay and for green manuring.

On the question of the new School law, the people are about equally divided.

SUSSEX COUNTY.

Report indicates that the past year has not been a financially prosperous one for farmers, nevertheless in many ways it has been a year of progress, since it happens that in hard times people get a grip on the situation and learn from necessity many lessons not easily forgotten.

The production of milk is still the leading interest. This source of income is becoming more unprofitable, and probably less milk will be produced, since, by comparisons, it is shown that by the continued sale of milk from the farm, its fertility is decreased unless artificially restored.

REPORT OF COMMITTEE.

325

Corn and fodder crops were partial failures, and, as a coincidence, feed is high and the price of milk unprecedentedly low.

Many thousand baskets of extra fine peaches were sold during the past year.

The peach crop is growing in importance, and the soil seems especially adapted. Almost every farmer has from 5 to 50 acres in peach trees.

UNION COUNTY.

Displays unusual activity, reporting ten regular meetings and one Farmers' Institute; the latter was held in March last.

They also have a library devoted to farm and garden literature and comprising also a full list of State and government reports; exhibiting thereby a worthy example for other counties to emulate.

The season is reported as unprofitable. Owing to unfavorable weather many crops realized but half of their usual yield.

Competition with foreign products is a serious evil and a higher tariff is desired which shall in a measure limit the excessive importation of such articles as, under the present prices, often cost more to produce in this country than can be realized from the proceeds.

Under these depressing prospects farmers' sons seek more congenial and profitable careers elsewhere and desert the ancestral acres.

This county is largely devoted to garden-farming, but the yield this year has not been satisfactory and prices have been much lower than formerly.

The potato crop is estimated at 50 per cent. and tomatoes and fruits at 75 per cent. of the ordinary result.

Union county is also largely engaged in dairying and the milk produced is mostly disposed of in adjacent towns, realizing at retail from 6 to 8 cents a quart. The disposition of milk at wholesale is not considered profitable, since the benefit to the middlemen is often greater, for a correspondingly less expenditure, than the meager profit that the producer is obliged to accept.

This county has upwards of forty miles of Telford pavements, costing from \$7,000 to \$10,000 per mile. The full appropriable limit of \$350,000 has been reached, and a halt has been ordered.

The report suggests the propriety of imposing a tax of \$1 per year on bicycles, inasmuch as that kind of personal property is on the

increase, and for the reason that the wheelmen sometimes almost monopolize the public roads. Such tax to be used for the maintenance of the common thoroughfares.

CONCLUSION.

In conclusion, your committee invoke the approval of the State Board of Agriculture, and its acknowledgment of the inestimable aid afforded by the New Jersey State Agricultural College and also by the New Jersey Experiment Station and their respective officers, as well as for the valuable services rendered by many others, often gratuitously, toward the establishment and perfection of a more widely-extended organization and edification of the farming population; and especially does your committee commend the energetic efforts and faithful services of Mr. Franklin Dye, the Secretary of the Board, in these praiseworthy endeavors.

Among the many merits of the reports nothing is more apparent and valuable than the evidences of personal effort shown by the Secretaries of the various County Boards in obtaining so great an amount of varied information, both novel and practicable; and it would seem proper that such large-hearted and painstaking sacrifice should receive special notice.

It is desirable that special effort be made to have these reports in the hands of the Secretary of the State Board on a date early enough to enable him to give them the desired attention before the annual meeting of the State Board, when more than the usual amount of business presents itself, and when imperative calls for his presence in various parts of the State are prevalent, and early enough to afford the committee of inspection that impartial and careful study of each report which is certainly due to it.

Mr. Ward—This report carries an immense amount of valuable information, and as a great deal of work was necessary to prepare such an interesting summary, I would move a vote of thanks to the committee; also that their report be referred to the Executive Committee for publication.

Carried.

REPORTS
OF
County Boards of Agriculture.

(327)

You Are Viewing an Archived Copy from the New Jersey State Library

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 per bushel December 1st—cents.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price per bushel December 1st—cents.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price per bushel December 1st—cents.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price per bushel December 1st—cents.
Atlantic.....	70	30	67	71	13	60				68	15	44
Burlington.....	80	50	55	80	20	60	80	15	55	50	20	40
Camden.....	85	45	55	80	20	63				40	20	40
Cape May.....	71	30	55	88	16	63				77	23	44
Cumberland.....	50	25	50	100	20	60				40	20	40
Essex.....	80	60										
Gloucester.....	54	30	50	75	12	60				50	20	45
Hunterdon.....	85	33	55	106	16	60	106	15	60	80	26	35
Mercer.....	75	40	50	87	19	58				70	35	
Middlesex.....	75	41	53	83	21	61	120	15	50	64	31	38
Monmouth.....	100	56	60	100	22	60	100	25	50	100	35	35
Morris.....	55	50		84	18					75	38	
Ocean.....	50	40	55	80	10	62½	65	8½	62½	75		60
Salem.....	63	33	50	87½	18	62				55	25	40
Somerset.....	50	27	49½	81	18	60	75		45	74	28½	37½
Sussex.....	54	31	60	92	17	68				60	22	40
Union.....	75	35	55	95	30	60	95	25	75	90	30	40
*Total product—bushels.....		8,991,251			1,779,069			1,120,478			3,085,575	
Total value.....		\$4,855,276			\$1,085,232			\$616,263			\$1,172,519	

*From Final Report United States Department of Agriculture, December, 1894.

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS—CONTINUED.

COUNTIES.	BUCKWHEAT.			HAY.			POTATOES, WHITE.			POTATOES, SWEET.		
	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price per bushel December 1st—cents.	Product compared with last year—per cent.	Average yield per acre—tons.	Average price per ton, prime, December 1st.	Product compared with last year—per cent.	Average yield per acre—barrels.	Price per barrel November 1st.	Product compared with last year.	Average yield per acre—barrels.	Price per barrel November 1st.
Atlantic.....				90	1 1/4		58	70	\$2 00	120	50	\$1 75
Burlington.....				100	1 1/2	\$13 00	33	13	1 87 1/2	100	60	1 25
Camden.....					1 3/8		25		1 60	100	180	1 50
Cape May.....					1 3/8		77	85	1 92	110	60	1 00
Cumberland.....					1 3/4		50	50	1 80	90	45	1 25
Essex.....					2							
Gloucester.....					2		33	75	1 80	98	60	1 50
Hunterdon.....	50	6	60	120	1 3/4		160	20	1 50			
Mercer.....					1 3/4		50	75	1 55	95		
Middlesex.....				125	1 3/8	13 00	48	26	1 50	76	98	1 75
Monmouth.....					1 3/8	13 00	58	40	1 50	100		1 50
Morris.....					1 3/8		50	30	2 00			
Ocean.....				100	1 1/4	20 00	25	14	2 00	110	40	2 50
Salem.....				100	2	12 00	48	23	1 40	96	43	1 20
Somerset.....					1 3/8	10 00	45	42	1 75			
Sussex.....					1 3/8		54	62	1 90			
Union.....	75			100	1 1/2	15 00	55	40	2 00			
Total product for State.....		196,517			586,443 tons			2,796,660				
Total value.....		\$127,736			\$3,262,982			\$1,733,929				

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS.—CONTINUED.

COUNTIES.	APPLES.			PEARS.			PEACHES.			GRAPES.		
	Product compared with last year—per cent.	Average yield per acre—barrels.	Price per barrel Novem-ber 1st.	Product compared with last year—per cent.	Average yield per acre—barrels.	Price per barrel Novem-ber 1st.	Product compared with last year—per cent.	Average yield per acre—baskets.	Average price per basket for the season.	Product compared with last year—per cent.	Average yield per acre—pounds.	Average price per pound for season—cents.
Atlantic.....	38		\$2 25	45		\$2 70	8		\$0 70	75	2,300	2 ¹ / ₄
Burlington.....	25	25	2 00	80	62	2 00	40		60	90	4,000	2
Camden.....	20		1 75	50		1 50	20	120	40	90		2
Cape May.....	10		2 50	50		3 00	10		1 25	100		4
Cumberland.....				75	200	1 75				100	3,000	2
Essex.....	100	50	3 00									
Gloucester.....	25											
Hunterdon.....	200	90	2 50			2 50		*200	45			
Mercer.....	65			100			55					
Middlesex.....	37	37	2 15	79		2 52	75		80	65	2,000	3
Monmouth.....	32	24	1 80	70	125	1 50	45	170	50	80	4,000	1 ¹ / ₂
Morris.....	75		2 00				70		40			
Ocean.....	30		2 50	50		3 50	100		50	25		4
Salem.....	42	46	1 78	65	30	2 28	10		50	66 ² / ₃	1,500	2 ¹ / ₂
Somerset.....	65		2 80	75		2 50	86	160	42	70		3
Sussex.....	95	65	1 30	98	125	1 15	80	245	70	38		
Union.....	60	30	2 00	75			75		65	75		3

* Total crop for county, 1,514,453 baskets.

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS—CONTINUED.

COUNTIES.	STRAWBERRIES.			RASPBERRIES.			BLACKBERRIES.			WATERMELONS.		
	Product compared with last year—per cent.	Average yield per acre—quarts.	Average price per quart for season—cents.	Product compared with last year—per cent.	Average yield per acre—quarts.	Average price per quart for season—cents.	Product compared with last year—per cent.	Average yield per acre—quarts.	Average price per quart for season—cents.	Product compared with last year—per cent.	Average yield per acre.	Average price per 100 for season.
Atlantic.....	88	1,900	6½	65	1,180	6½	65	1,180	6½			
Burlington.....	80	3,000	7¼	50	1,000	8½	75	1,500	10½	75	800	\$7 00
Camden.....	75	2,000	6	40			40					8 00
Cape May.....	90	2,200	7		1,000	8		1,000	8		450	11 00
Cumberland.....	90	2,500	4	100	2,000	8	100	2,000	8		600	2 00
Essex.....												
Gloucester.....												
Hunterdon.....	80		7									
Mercer.....	75			90			90					
Middlesex.....	94	3,320	7	67	500	9	67	500	9	80	200	4 00
Monmouth.....	100	3,625	10	65	2,500	10	65	2,500	10	90		
Morris.....												
Ocean.....	100		8							85		12 50
Salem.....	84	2,900	6	40		6½	40		6½		500	7 37½
Somerset.....	90		8	60		9	60		9			
Sussex.....	78	1,500		45		9	45		9			
Union.....	75	4,000	9	70		12	75		11			

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS—CONTINUED.

COUNTIES.	CITRON MELONS, OR CANTALOUPEs.			CUCUMBERS.			CABBAGES.			TOMATOES.*		
	Product compared with last year—per cent.	Average yield per acre—baskets.	Average price per $\frac{1}{8}$ -bushel basket for the season—cents.	Product compared with last year—per cent.	Average yield per acre—baskets.	Average price per $\frac{1}{8}$ -bushel basket for the season—cents.	Product compared with last year—per cent.	Average yield per acre—heads.	Average price per 100, November.	Product compared with last year—per cent.	Average yield per acre—tons.	Average price per $\frac{1}{8}$ -bushel basket.
Atlantic.....		100	30			30	100	2,730	\$2 85			\$0 40
Burlington.....	75	360	30	75	200	30	80	4,000	2 00	75	7½	1 00
Camden.....		2,000	25			30	100		2 50	250		15
Cape May.....		400	25		400	25	80	3,000	4 50		8	25
Cumberland.....							75	3,000	4 00		8	35
Essex.....												
Gloucester.....							60	2,000	2 50		10	45
Hunterdon.....											7½	
Mercer.....						14	75	3,500	3 00			
Middlesex.....	80			100	100		76	3,000	4 00	100	10	30
Monmouth.....	90	350	30				75	2,500	4 00	100	10	
Morris.....							70	2,500	4 50			
Ocean.....	105		25				25	2,000	3 00	40	7	40
Salem.....			30	10	30	20	53	2,000	3 50	90	7½	25
Somerset.....											5	25
Sussex.....							60	2,000	5 00			
Union.....				60		90	110		3 00	100		50

* Besides those used for daily consumption during the growing-season, there were packed in New Jersey, in 1893, 977,242 cases of two dozen each.

STATISTICAL TABLE OF FARM STOCK AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS—CONTINUED.

COUNTIES.	HORSES.				MULES.				COWS.		YOUNG CATTLE.	
	Total number compared with December 1st, 1893—per cent.	Average price between 1 and 3 years old.	Total number compared with December 1st, 1893—per cent.	Average price between 3 and 7 years old.	Total number compared with December 1st, 1893—per cent.	Average price between 1 and 3 years old.	Total number compared with December 1st, 1893—per cent.	Average price between 3 and 7 years old.	Total number compared with December 1st, 1893—per cent.	Average price between 1 and 3 years old.		
Atlantic.....	100	\$75 00	100	\$88 00	75	\$100 00	100	\$55 00	100	\$20 00		
Burlington.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Camden.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Cape May.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Cumberland.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Essex.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Gloucester.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Hunterdon.....	100	75 00	100	100 00	75	100 00	100	55 00	100	20 00		
Mercer.....	88	60 00	100	100 00	99	75 00	100	35 00	100	25 00		
Middlesex.....	100	40 00	100	100 00	100	60 00	100	45 00	100	20 00		
Monmouth.....	100	90 00	100	125 00	100	125 00	100	35 00	100	20 00		
Morris.....	100	90 00	100	90 00	100	125 00	85	30 00	75	20 00		
Ocean.....	100	125 00	100	100 00	100	125 00	100	30 00	75	20 00		
Salem.....	100	65 00	100	85 00	100	100 00	100	30 00	100	15 00		
Somerset.....	100	65 00	100	80 00	100	100 00	100	35 00	100	16 00		
Sussex.....	100	75 00	100	100 00	100	125 00	100	35 00	100	16 00		
Union.....	100	75 00	100	90 00	100	80 00	110	50 00	90	30 00		
Total number for State.....	84,987		100		8,047		192,641		*48,956			
Total value for State.....	\$5,608,180				\$661,103		\$8,056,633		\$1,174,323			

* Including oxen.

STATISTICAL TABLE OF FARM STOCK AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS—CONTINUED.

COUNTIES.	VEAL CALVES.		SHEEP.		LAMBS.		SWINE		TURKEYS.		CHICKENS.		WINTER WHEAT.		WINTER RYE.	
	Total number compared with December 1st, 1893—per cent.	Average price per pound for season—cents.	Total number compared with December 1st, 1893—per cent.	Average price per head for store sheep.	Total number compared with December 1st, 1893—per cent.	Average price per head for spring lambs.	Total number compared with December 1st, 1893—per cent.	Average price per pound December—cents.	Total number compared with December 1st, 1893—per cent.	Average price per pound November and December—cents.	Total number compared with December 1st, 1893—per cent.	Average price per pound November and December—cents.	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	5½	100	\$3 00	75	\$5 00	100	5½	75	13	100	13	50	100	75	100
Burlington																
Camden								6		12		10	90		90	
Cape May																
Cumberland																
Essex																
Gloucester																
Hunterdon		6						5½		13		11	90	100	95	100
Mercer	100	5¼	80	4 00	75	5 00	100	5½		12		11	82	95	100	95
Middlesex	100	6	80	3 00	80	4 50	100	5½	100	12	100	10	80	100	40	100
Monmouth	100	6	100		100		100	6	100		100		80	100	100	100
Morris													100		100	
Ocean		6					100	6	25	12	75	8	120	100	100	100
Salem	100	6	100		100		100	6	100	13	100	12	84	100		
Somerset		5½	4 00		4 50			5		10		8½	90	100	90	100
Sussex													80	100	87	100
Union	110	6½							90	13	90	11				
Total number for State...			50,662				170,515									
Total value for State.....			\$172,849				\$1,316,729									

You Are Viewing an Archived Copy from the New Jersey State Library

ATLANTIC COUNTY.

OFFICERS FOR THE YEAR 1895.

<i>President</i>	PHILIP BERGMANN	Egg Harbor City.
<i>Vice President</i>	WILLIAM A. ELVINS.....	Hammonton.
<i>Secretary</i>	VALENTINE P. HOFMANN.....	Egg Harbor City.
<i>Treasurer</i>	FREDERICK FIEDLER.....	Egg Harbor City.

BOARD OF DIRECTORS.

J. E. HOLMAN, Hammonton Fruit-Growers' Union, Hammonton.
G. W. ELVINS, Hammonton Fruit Growers' Association, Hammonton.
BERNARD GRAWE, Atlantic County Agricultural and Horticultural Association,
Egg Harbor City.
LOUIS YOUNG, Germania Fruit-Growers' Union, Cologne.
D. U. BROWN, Director-at-Large, P. O., Elwood.

DELEGATES TO STATE BOARD.

V. P. HOFMANN (two years).....	Egg Harbor City.
WILLIAM A. ELVINS (one year).....	Hammonton.

ANNUAL REPORT.

BY V. P. HOFMANN.

The County Board has held two meetings during the past year, one, largely attended, at Hammonton, on February 27th, 1894, when Secretary Franklin Dye, of the State Board, spoke upon the subject of "Organized Agriculture;" Theodore F. D. Baker, of Bridgeton, N. J., on "Cultivation of Strawberries and Crimson Clover;" and Prof. J. B. Smith closed with an illustrated evening lecture on the "Insect Problem."

The annual meeting was held at Egg Harbor City, on December 14th, 1894, which was better attended than in any previous year. The order of business was as follows:

10:30 A. M.—Official business and election of officers.

11:15 A. M.—Address by Secretary Franklin Dye, upon the subject of "Duties of Farmers." They particularly should avail themselves

of the advantages placed at their disposal ; we have State and County Boards of Agriculture, Agricultural Experiment Stations and Colleges. Farmers should not be careless and slipshod in their methods, and they should interest themselves more in the study of the needs of the soil and plants and the insect enemies of fruits. Man learns by failure and by experience. The home is the center of living, therefore make it attractive and the happiest place. Make our business more productive. Don't sacrifice your health, but avail yourselves of recreation. Compare notes, and discuss the same and help each other, and by it advance agriculture. Hopes our Board will prosper, and enlist the hearty co-operation of all the tillers of the soil in the county.

11:45 A. M.—Address, "Poultry-Raising for Profit," by C. E. Chapman, of Peruville, N. Y. He remarked that he has made it a maxim that if we continually take from the soil and do not return to it the equivalent removed we will impoverish it ; we should use clover, commercial fertilizers, &c., to prevent the continual robbery, especially in sandy soils, where there is not much fertility to take away. In the poultry business we have all the means to retain fertility. A poor man can go into the business without much experience or capital ; he should cultivate the home market, and not go into the business unless there is money in it ; he should commence on a small scale, and gradually enlarge it. There is a great demand for eggs, and it is steadily increasing in the varied uses of the product in the applied arts and by confectioners. Hens should be housed in warm and dry buildings and proper food be given, when the best results can be obtained.

1:30 P. M.—The following resolutions were presented and passed :

Resolved, That we indorse the action of the last Assembly in the matter of good roads and urge the passage of a law applicable to this section of the State, and ask our representatives to vote for such a measure.

And further resolved, That we urge the enactment of a law for the destruction of insects injurious to fruits."

2 P. M., address, "The Food Cost of Cows," by James Cheesman, President of Eastern Buttermakers' and Cheesemakers' Association, of Massachusetts. He said he was pleased with our State and of the opportunities to visit this section of it. He had been speaking to the people of the northern part of this State that he would not be satisfied with less than three hundred pounds of butter per cow a year, but

here he would raise the standard and make it four hundred pounds, because of the mild climate and cheap feed. He spoke of the area of land necessary to make dairying profitable; of the different animal foods and analyses of the same, and the most profitable breeds. Thinks this section particularly favorable, as it is in proximity to large cities, and better prices can be realized.

3:30 P. M., address, "Small Fruits," by C. E. Chapman. We can obtain better prices here than we can in New York State, where the soil is stored with full fertility. Soil without humus is a desert. Where soil is too porous we must try to better it or put humus in it, for where the soil is black it attracts warmth and holds nitrogen. Potash is essential in all soils. Soil restoratives must have this in view. Have proper soil conditions. The more you stir it the finer it gets, with tendency to pack and firm the same and also acts then as a mulch in dry weather. Plow and work it over—the more cultivation the more fertility, and the deeper you can plow the more moisture it will hold. In planting of plants study peculiarities and the quickest method of setting the same. Set out as early as ground can be worked before summer. Plant blackberries and raspberries in hedge rows and shade the ground; plant strawberries in rows three feet apart, and the first year plant potatoes between the rows. In raspberries tip off the canes to produce laterals and then tip them also, and thus induce them to have an eight to thirty-two-fold bearing surface. Aim to have fine fruits. Buy largely of potash and phosphoric acid, one of the most essential ingredients for fruit-growth. Would recommend the following top-dressing: 400 pounds muriate of potash, 200 pounds nitrate of soda, 800 pounds dissolved bone black or fine bonedust, or a proportion of one-half potash, one-fourth nitrates and one-fourth phosphates. Muriate of potash applied produces larger quantity of fruit and sulphate of potash better quality.

7:30 P. M., illustrated lecture on "Entomology," by Prof. John B. Smith, which was listened to with the greatest attention.

Considerably more interest was manifested in answering the circulars sent out. By exercising some patience, I trust that in the near future every township in the county will be spurred on to send in its report, to present to the public its respective merits and capabilities, and thereby aid in forming a strong county organization, whereby we shall be more able to protect ourselves from the encroachments and burdens of monopolistic corporations and also in inducing legislators

in furthering laws for the welfare of their constituents. The State Board having done everything in its power to interest the farmers of this county in the needs and problems of agriculture, they should not prove ungrateful for the interest manifested in their advancement as agriculturists.

Mr. William G. Saalman, of Mullica township, reports: "The season just ended has been quite disastrous to the farmers of this section. The long-continued drouth during the summer months, while injuring almost all crops, in very many cases caused almost total failures. The copious rains of late summer and fall benefited late crops, such as sweet potatoes, tomatoes, roots, &c., and was also favorable for the germination of grass, clover and grain seeds. The young plants made quick growth and have developed nicely, thus insuring a good stand before winter. A largely-increased area has been seeded to crimson clover this fall. This plant has proved a good hay and soiling crop; also the best soil renovator. The hay crop was slightly below the average, all secured in excellent condition. Potatoes, corn and truck fell considerably short of an average crop. Small fruits produced a good crop, and prices were well maintained. The season has been a bad one for the production of tree fruits. Frost, wet and drouth have successively interfered with the proper blooming, setting, growth and maturity, so that at time of harvest the smallest crop for years has been gathered. Grapes from same causes were not a full crop."

Mr. Elias S. Reed, of Buena Vista township, reports: "I can see no remedy for the robbery by railroads perpetrated constantly and onerously against all classes of patrons, but most severely against farmers, except that the Federal Government buy them all up and run them at cost, as it does the postal service. The right of the Federal Government to do so cannot be questioned, as they (the railroads) are far more mediums of commerce than the tidal water-courses within its domain."

Grapes.—Owing to the dry season the quality of grapes grown was better than for some years past. The ravages of the grape-rot were also less prevalent. Whether the application of Bordeaux mixture will prevent all such cases is still a mooted point with some, who were partly strengthened by the fact that, in many instances where it had not been applied, full crops were realized, and in others, where applied, the crop had succumbed. It is estimated that in Egg

ATLANTIC COUNTY.

Harbor City and vicinity, in 1894, about 35,000 gallons of wine were manufactured. Owing to the business depression, the demand was lessened and the output decreased.

Hog Cholera has of late been extant in various parts of the county, and generally carried off the heavier and full-grown swine.

Whether the new School law is an improvement over the old district system is an open question in the county. One writer remarks: "The members of the Board of Education in a township are too remote from one another to conveniently transact business. The inhabitants of a school district (old form) know the wants of their immediate neighborhood better than others. The new law seems to be a movement for the centralization of power." Another writer remarks: "It will be more expensive; incompetency of boards applies to whole townships, whereas before, it applied to only one district." Another writer remarks: "In Pleasantville borough, yes; but in the adjoining township, where most of the farmers are, *it is not*; some of them would have nine miles to go to a central school."

I herewith append a meteorological weather report for Egg Harbor City, N. J., for the year ending December 1st, 1894, as presented by Voluntary Weather Observer Henry Y. Postma:

	TEMPERATURE.							Rain and melted snow—inches.	Snow—inches.
	Maximum—degrees.	Minimum—degrees.	Mean—degrees.	Highest.	Date.	Lowest.	Date.		
1893.									
December.....	45.0	27.0	37.0	66.0	25	8.0	14	2.89	2.00
1894.									
January.....	43.0	28.0	35.0	57.0	24	11.0	28	2.92	.....
February.....	40.5	23.5	32.7	60.0	18	3.0	25	5.29	8.50
March.....	56.0	34.0	45.7	81.0	19	18.0	27	1.76	.....
April.....	59.0	39.0	49.0	81.0	28	24.0	7	3.26	0.05
May.....	72.4	52.0	62.0	88.0	2	42.0	12	10.78	.....
June.....	82.0	59.0	70.7	97.0	23	45.0	14	1.04	.....
July.....	87.5	64.8	76.3	101.0	29	47.0	10	0.70	.....
August.....	80.6	60.0	70.0	90.0	8	48.0	22	4.03	.....
September.....	78.5	59.0	69.2	92.0	10	42.0	28	7.92	.....
October.....	64.5	46.0	55.3	84.0	3	32.0	16	6.41	.....
November.....	49.0	32.0	40.0	69.0	5	16.0	30	2.96	.....
Means.....	63.2	43.6	53.6	80.5	.....	28.0	.....	4.16	.....

The greatest precipitation in any twenty-four hours was 5.29 inches, which fell from May 20th, 9 p. m., until May 21st, 9 p. m. The least precipitation of any month fell on July 16th and 22d, total amount 0.70 inch.

You Are Viewing an Archived Copy from the New Jersey State Library

BERGEN COUNTY.

Since the last annual meeting of the State Board, there has been organized in Bergen county a County Board. Following is a copy of the notice of organization and a list of the officers elected, as filed with the Secretary of the State Board of Agriculture, according to law.

NOTICE OF ORGANIZATION OF THE BOARD OF AGRICULTURE OF BERGEN COUNTY.

At a meeting of the residents of Bergen county interested in agriculture, held in the Opera House in Hackensack, on Saturday, February 2d, 1895, which meeting was in pursuance of a call published in the county papers and also otherwise advertised, it was resolved to form a Board of Agriculture of Bergen county, and auxiliary to the State Board of Agriculture of New Jersey.

The following were elected as officers :

<i>President</i>	H. W. COLLINGWOOD.....	Hackensack.
<i>Vice President</i>	ABRAM C. HOLDRUM.....	River Vale.
<i>Secretary</i>	MALCOM H. ANGELL.....	Etna.
<i>Treasurer</i>	DANIEL I. DEMAREST.....	Oradell.

BOARD OF DIRECTORS.

SAMUEL R. DEMAREST, JR.....	Hackensack.
MARTIN MYRES.....	Woodcliff.
JOHN HECK.....	Westwood.
ALBERT Z. BOGERT.....	River Edge.
DAVID A. PELL.....	Saddle River.
JOHN ACKERMAN.....	Englewood.
GILBERT D. BOGERT.....	Garfield.
JOHN C. VAN SAUN.....	Maywood.

344 STATE BOARD OF AGRICULTURE.

Those who signed the articles of association at the meeting were as follows:

ABRAM C. HOLDRUM,
H. W. COLLINGWOOD,
SAMUEL R. DEMAREST, JR.,
MALCOM H. ANGELL,
H. J. DE VOE,
H. I. ANGELI,

D. I. DEMAREST,
JOHN HECK,
H. L. CRANE,
M. J. MYRES,
J. C. VAN SAUN,
A. Z. BCGERT.

Attest:

MALCOM H. ANGELL,
Secretary.

BURLINGTON COUNTY.

OFFICERS FOR 1894.

<i>President</i>	CLAYTON CONROW..	.....Cinnaminson.
<i>Vice President</i>	EDWIN HOLMES	Moorestown.
<i>Secretary</i>	HENRY I. BUDD.....	Mount Holly.
<i>Treasurer</i>	JAMES LIPPINCOTT.....	Mount Holly.

BOARD OF DIRECTORS.

EMMOR ROBERTS, Burlington County Agricultural Society, P. O., Fellowship.
MARK H. BURGLEN, Mount Laurel Farmers' Club, P. O., Mount Laurel.
ALBERT HANSELL, Coopertown Progressive Farmers' Club, P. O., Rancocas.
EDMUND COOK, Pomona Grange, P. O., Burlington.
EDMUND BRADDOCK, Medford Grange P. O., Medford.
ROBERT TAYLOR, Columbus Grange, P. O., Columbus.
ALFRED SATTEETHWAITE, Crosswicks Grange, P. O., Crosswicks.
THEODORE BUDD, Pemberton Grange, P. O., Pemberton.
GEORGE B. HANCOCK, Rancocas Grange, P. O., Rancocas.
CLAYTON L. ANDREWS, Moorestown Grange, P. O., Cinnaminson.
NATHAN T. WRIGHT, Edgewood Grange, P. O., Burlington.
HENRY C. LIPPINCOTT, Director-at-Large, P. O., Marlton.

DELEGATES TO STATE BOARD.

CLAYTON CONROW (two years).....Cinnaminson.
THOMAS J. BEANS (one year).....Moorestown.

MEETINGS.

The regular meetings of the Board are held at Mount Holly, on the second Saturday of August and December, at 10 o'clock A. M.

In addition to the Mount Laurel and Coopertown Farmers' Clubs there are seven subordinate and one Pomona Grange in the county. (See State Grange list).

ANNUAL REPORT.

BY HENRY I. BUDD.

The Burlington County Board of Agriculture held its annual meeting in December.

There was a large attendance and unusual interest manifested. There was much discussion and many fine papers presented, principally by our own farmers. Their talent for expression is rapidly developing, and a very encouraging feature is that many of our young men are coming to the front, manifesting by their earnest and practical talks a renewed interest in the development of their calling along more profitable lines.

A full report of the proceedings will be found below.

President John M. Lippincott, of Moorestown, called the meeting to order and made a brief opening address.

He referred to this as a year of peculiar circumstances, some of which it was unnecessary to mention. The meetings of the Board were for the purpose of promulgating ways and means to increase the happiness and prosperity of the farmer and his family. Prosperity is hindered by lack of organization, and the latter is hindered by indifference and lack of sufficient interest to attend the meetings. Farmers seem to have a happy faculty of absorbing a great deal of knowledge, but fail to disseminate it in a practical way. He was sorry there were no ladies present. They are all-important to successful farming. They should attend the meetings. They lighten the mass. He closed his remarks with the hope that the meeting would be a profitable one.

The Secretary's report comprised a statement of the crop conditions for the past year, giving averages, comparisons and other valuable statistical information, and is as follows :

CROP REPORT FOR 1894.

BY HENRY I. BUDD.

Agriculture in Burlington county for the year about expiring, has had a checkered experience. The cold starting-season of April, the heavy and long-continued rains of May and June, not only soaked

but submerged the ground, parched and soddened the soil and washed out many plants, while the wild winds whipped and bruised the tender sprouts and vines. Then the unusual number and varieties of grubs, root-maggots, cut-worms and plant-lice laid long and active siege to all forms of cultivated plants, necessitating repeated replanting and resetting. This, coupled with the absence of sunshine for several weeks, followed by extreme drouth and scorching winds, continued from the middle of June until the middle of September, making few envy the vocation of the farmer.

The bright sunshine and absence of rain in late June and early July made the gathering of hay and grain an exceedingly pleasant task and assisted in securing these crops in the finest possible condition.

Hot, scorching weather now became the rule through the most of the growing-season, occasionally relieved in limited and favored sections by thundershowers. During this period so favorable to the development of plant-lice and insect enemies, much damage resulted from their depredations.

Pasture-fields became brown, corn turned yellow, early truck wilted, potatoes ceased to grow and fruit prematured and fell.

The last of August brought copious rains to a few sections and saved the corn, where it had been favored with occasional showers on loamy and black sand lands, but on heavy clay, gravelly and light lands it was then past the saving.

Generous rains on the 8th of September broke the general drouth, and gave sufficient moisture to perfect the tomato and sweet potato crops, renew the pastures and save the young grass.

"The drouth reduced the yield of many crops on garden farms, but acreage was so much above the average, and Southern shipments so heavy, that markets were glutted throughout the season. The drouth helped the market by making supply more nearly equal to market needs.

"The May rainfall, 12.88 inches, more than 1,200 tons of water per acre, was the most probable cause of our light potato crop and slow, unprofitable growth of many tender early crops, by packing the soil and washing all that was then soluble below the feeding-roots. There was such vigorous growth late in the season as if much of this was brought back to useful position by capillary attraction. This was especially true on lighter soils."

Although the conditions the past summer have not been good for the production of cheap milk, the price has been lower than for the past two years, owing to the large quantities brought from New York State to the Philadelphia market by an association of dealers in Philadelphia acting in opposition to the Farmers' Protective Association. The price netted has ranged from 2 to $3\frac{1}{2}$ cents per quart wholesale, at shippers' stations.

Pork maintains a lower range of prices, and the production seems to be gradually increasing on account of the higher prices prevailing the past three years. Present price, $5\frac{1}{2}$ to 6c.; former price, $7\frac{1}{2}$ to 8c.

Poultry, from one of the most profitable productions of the farm, has dropped to exceedingly low prices, so that at 8 to 13 cents a pound it might be said scarcely to pay, except to the skillful breeder and for the production of eggs.

Last year the excessive accumulations from two years of cold storage coming upon the market, broke the price to unprofitable figures. This year the immense amount of scrawny skeletons, almost devoid of flesh, coming from the West, hurried off on account of the short crops of corn in many sections, is in competition with ours, keeping quotations on a very low level.

The corn crop at the start had to contend with cold weather and the grubs. Later on it was for weeks almost submerged, so the fields could not be worked. Then came the excessive heats and drouths, making the ground hard in much of the low lands, stunting and making yellow the stalks before they could mature. Despite these adverse influences, on loamy and black sand land, where there was an occasional shower, the yields were phenomenal, although there are so many poor crops in sections of all the townships composing our county, the average quality and quantity is far ahead of last year, and we think can be safely estimated at 80 per cent. of a full crop. The stalks are shorter than for many preceding years, thus testifying to the absence of moisture during the growing-season, but the period of cutting and stacking was favorable for gathering the fodder bright and in the finest possible feeding condition. The frequent rains during husking-season have caused the grain to be gathered in damp condition. The price is about 55 cents per bushel, tendency higher.

The hay crop was a full average and of very fine quality; the most of it was gathered without a single wetting. There is much of it seeking market, but the price is affected by the times, the use of

Western and Northern baled hay, and the substitution of electricity for horses in our town, and cities as motors for street cars. The price about \$13 per ton.

Sowed or drilled corn fodder is usually largely grown, but the extremely dry weather prevented the usual seeding in July, consequently the supply is much short of last year.

The dry season also prevented the liberal seeding of scarlet clover in August, but where a stand was secured the outlook is very fine. Young grass all over the county has an exceedingly attractive and promising appearance. If nothing destroys and the season of 1895 is favorable for growth, there will be next year, on account of the favorable setting, a large crop of hay. The crops of wheat, rye and rye straw were good; the straw so low—\$6 to \$8 per ton—it scarcely pays for the cutting and threshing. The grains are both being mostly fed and but little sold; much of the wheat is unfit for flour, on account of the depredations of the angoumois grain moth. Many fine grass fallows are taking the place of winter grain, and if the price for grain continues so low, we in the future will probably import the wheat, as we do now the flour, for home consumption.

It is scarcely probable that in the future our Eastern capitalists will continue to loan Western farmers millions of dollars to raise wheat at present prices, so low it will not pay for the cutting and threshing. In Oregon and Washington thousands of acres are now covered with ripened and rotting wheat because the price will not pay interest on the Eastern capital loaned to grow it. When capitalists learn that home investments at lower rates of interest bring the surest net returns, we will not have wheat raised in the far West at a loss to compete with our crops and depress the price of our lands.

White Potatoes.—Last year the potato farmer went on his way rejoicing; this year he mourns for his lost treasures; his high-priced seed and commercial fertilizers, with liberal stable manures and much labor, produced from zero to one-quarter of a crop measly small potatoes out of flavor, watery and scarcely worth the eating, and yet the prices are low. Stimulated by the success of last year, he in many cases doubled his acreage; the results are it will take another good crop-season to retrieve his losses.

Cabbage is a fairly good crop, but prices very low, netting $1\frac{1}{2}$ to 3 cents per head.

Early Tomatoes.—A very poor crop, but good prices were maintained until the late crop came upon the stage, which was so large it overran the canneries at the contract price, \$7 per ton, and found low prices and slow markets in the cities. Those who had not contracted realized little for their labor.

The weather conditions were such that the late crop blossomed and matured late, but the prolonged growing-season and hot sun rapidly matured the fruit, crowding the canneries and other markets.

Apples.—There was a reasonable sprinkling of early apples in many orchards; very few late ones on any—altogether, not more than 25 per cent. of a crop. Yet there were a few orchards that gave phenomenal yields, returning their owners handsome prices; so to them at least came the largest returns of any variety of fruit grown this year in our county.

Never before was the beneficial effect of spraying more manifest. Where neglected, most specimens were dwarfed or twisted, knotty and undesirable, but when several times sprayed with different mixtures the fruit was almost perfect.

Pears.—About 80 per cent. of a crop, the Keiffer still leading in yield and profit; have not sold as readily as apples. Our local markets were glutted with Keiffers, at 25 to 50 cents a basket.

The Japanese Plums are attracting much attention. They produce handsome yields of fine fruit, but the immense crop of New York State, like their grapes, so overloads the markets, it is doubtful whether commercial orchards could be made profitable.

Peaches.—The majority of orchards bore only a few peaches. A few had large yields, almost breaking the trees with their burdens. Their almost entire failure in South Jersey and Delaware made our growers believe they would realize handsome prices, but the outcome was they moved slowly, and our large growers only realized an average of 50 to 60 cents a basket, while many a basket of the later varieties, shrunken somewhat with the dry weather, went begging at 25 cents a basket. Our trees have not recovered from the severe freezing of two years ago, and many consequently this year bore their last crop of fruit. This season has demonstrated that irrigation would be of incalculable advantage to peach orchards.

BURLINGTON COUNTY.

Strawberries were a good crop, but the fruit was much damaged by the rains of early June. The following dryer weather perfected them rapidly and made them of good size and fair quality, but they mostly found a glutted market, consequently poor average returns to the producers.

Blackberries.—A very large promise, the bushes, wild and cultivated, were black with the fruit, but the excessively dry weather dried the most of them on the bushes before perfecting, and thus saved the need of marketing. Prices only fair.

Raspberries.—A good crop; prices ordinary.

Grapes.—An excellent crop, but small on account of the drouth. Prices so low they did not pay for the marketing.

Cranberry Crop.—Small; about one-third of a crop, but the price is more than double of last year; from \$2.50 to \$3 per crate.

Citron Melons.—A medium crop, quality poor; heavy rains rotted the first seeding; lice very destructive, destroying many patches, yet the yield was sufficient to keep the price low.

Watermelons, a good crop but prices low. Georgia melons so fill the early cravings of the melon-eaters, they leave a poor margin for Jerseys. But they too, according to Dr. Smith, of Georgia, are being visited with a very destructive disease. Out of 1,500 hills planted in a region affected by the disease, the entire crop disappeared within four weeks. The fungus attacks the watermelon vine under the surface of the ground. It gets into the stem and stops up the water ducts, so the melon speedily withers away. If the Georgia melons have begun to wither, the crops of other States may probably share the same fate.

The *Sweet Potato* was a phenomenal yield. Like the last election, the result was a surprise. It cost much labor and many plantings to get the vines started, but the crop is so great it seemingly cannot be consumed; many thousands of baskets are stored and the prices have ruled ridiculously low; many sold for 75 cents to \$1 per barrel; so difficult to market that the first of November found much of the crop not yet removed from the ground.

Egg-Plants.—During the past few years the growing of egg-plants has been a great industry, filling our markets with thousands of beauties, selling as low as fifteen cents a basket. In no way can the consumer obtain so much nutriment for so little money.

Asparagus.—The growing of this esculent is each year being more extensively indulged in. The canneries have taken the surplus and maintained the prices at a paying rate.

This year, although the crop was poorer than usual on account of the cold spring, the price was low and the demand so limited on account of the suspension of so many canneries and the decrease of the purchasing capacity of the people that many beds that for years produced handsome returns were this year abandoned and plowed out.

The truck farmer this year mourns his meager returns. What with drowning storms in May and June, hot weather and scorching dry winds the remaining part of the growing-season; lice and insect pests of great variety; inability of the masses to buy, on account of the want of remunerative employment, he has been forced to accept a low range of prices for about the poorest crops recorded for many years.

The continued agitation about tuberculosis among our city Boards of Health is unsettling our milk producers, causing many to consider the abandonment of the business. It is almost certain that many of our milk producers are realizing no profit from their herds, and it is a pity they cannot be persuaded to abolish their shiftless management, make trial tests of their cows, and thus reject the animals that bring them only loss.

There is some cholera among hogs; considerable with chickens. Roup and gapes claim a large percentage of the crop.

Diseases and destructive insects of great variety among animals, trees and plants are on the increase and will require all the skill of our scientific schools and experimental stations, and hearty co-operation of our farmers, to successfully combat them.

One of our most successful fruit, grain and hay farmers writes: "If farming were not the best business in the world, farmers could not live and thrive under their present reckless ways of doing business. There are too many middlemen between the farmer and manufacturer, and also between the farmer and consumer. The farmers

that sell the product of their farms direct to the consumer have no reason to complain of these good Democratic times."

Another writes: "The times are good enough for any farmer who lives with his family upon his farm, and farms his own farm in a business-like way. Keep up to the times in everything and keep away from rum hounds. Live within their income and do unto others as they would be done by. Cause and effect go hand in hand."

Another writes of the new School law: "It is a most unwise, unjust and diabolical creation of officers. It is founded on the presumption that the people are unfit to manage their own affairs and must have them managed by a set of salaried officers. It would take very few such laws as that to cause an armed revolution."

Another writes: "I don't think legislation can do the farmer much good; only curtailing expenses and lessening our taxes. The School law won't take in our section; we had an election on it, and it was voted down."

To the question, "Has the past year been more prosperous than 1893?" the answers have mostly been in the negative. The reasons given are: too wet early, great and continuous drouth later on, low prices, too much tariff tinkering, no work for many caused by tariff tinkering. The prices of farms are given at \$40, \$50, \$65, \$75 and \$80, according to location, and one report gives \$150 per acre.

The majority of our correspondents indicate a scarcity of farm help, both indoors and out. While thousands in our cities and towns are being fed by charity, they cannot be induced to labor on the farm. The most that is obtained is of poor quality, not being trained to the occupation. The reasons given are: they are educated from the farm, too little pay and too long hours, want of energy and experience. Too many bring up their children in idleness. It is looked upon as degrading to do kitchen work. False pride, &c., &c.

Our Institutes and Boards of Agriculture are failing in their work in that they do not reach the tenant farmer. A large—perhaps the largest—number of our farms in Burlington county are now occupied by tenant farmers; how many of them are here to-day to learn the words of wisdom from those who have been studying and practicing for years the most improved and profitable methods for the conduct of their farms? By thus doing, they have in certain neighborhoods made farming a success despite the times, but the average tenant farmer grows poorer day by day, and the farm under his management

rapidly running down finally loses its commercial value. These clubs remind me of the church and prayer meetings; nine-tenths of the attendants are women who do not need saving, but the wicked men who do, are mainly noticed by their absence.

A need for improvement must be felt by all classes that have to do with the farm or the many valuable lessons we are constantly learning through practical and scientific teaching will be lost through the want of application.

Thomas Passmore said, "Agriculture is becoming an exact science. The farmer must be a doer of the word and not a hearer only." He must keep an account with all parts of his business. His account kept with the cow is sometimes fatal to the cow, but of advantage to the farmer. How many in selecting a herd have a knowledge of the following points :

"A cow with the business habit of keeping all her accounts with the world paid up through the man who owns and feeds her is a good business cow. That is the kind of a cow I recommend. Her power of service will be indicated by certain external points. She should have a large, long udder of elastic, fine quality; a mellow, movable skin, covered with soft, silky hair; a long, large barrel, hooped with flat ribs, broad and wide apart; a broad loin, spreading out into broad, long hindquarters; an open twist with rather thin hips and a lean neck of symmetrical length, carrying a clean-cut, fine face, with large, prominent eyes. A cow with these points has ability to serve a man well if she gets a fair chance. That her calves may have powers equal to or better than her own, care should be exercised in their breeding. The best blood of the breed best adapted to the farmer's purpose should be used to enlarge and not to lessen the working capacity to be transmitted to her calves."

EXTRACTS FROM SOME OF THE SUBJECTS PRESENTED, WITH
DISCUSSIONS FOLLOWING.

Want of space excludes the valuable papers on "Forest Preservation," "Farm Help" and other subjects.

Clayton Conrow, of Cinnaminson, commended the report as being most comprehensive. The reference to "citron," however, was misleading. One kind is a lunch or table delicacy in its natural state. Another is unfit to eat until preserved or pickled. We should dis-

tinguish them by different names. Cantaloupe should be the accepted term for that luscious species of melon, leaving the word citron to be applied solely to the species to be cooked.

Thomas J. Beans, of Moorestown, highly approved of this suggestion and vouchsafed the information that the word cantaloupe was aptly applied, the melon having derived its name from a place similarly named in Italy.

The various topics on the programme were then taken up in their order.

Edmund Cook, of Burlington, read a paper showing that there cannot be much improvement in the business of the country while the great staple crops, wheat, cotton and wool, are selling so low, or a fairer exchange of commodities, according to the capital and labor employed in producing them.

Hon. Albert Hansell, of Willingboro, said the farmers must confront the fact that we are now competing with India and the Valley of the Nile, in the production of wheat, and the Valley of the Nile has the great advantage of not requiring any outlay for manure, as the overflow of the river renews the life and vigor of the land.

In wool, we have Austria to compete with, besides the warm South American countries, where both labor and land are cheap. Big steamships now carry enormous cargoes and make transportation very cheap. Under these circumstances, competition was out of the question.

Hon. Theodore Budd, of Pemberton, could not understand how it would be any better for the farmers if they ceased to raise wheat and produced other crops instead. If they all raised pears, that industry would soon be ruined by over-production.

Henry C. Lippincott said foreign countries are seeking markets everywhere for surplus products, covering much territory we should supply. Past treaties of a reciprocal nature should be resumed. Germany says "We don't want your cotton if we can get it from other countries just as cheap." We are not giving sufficient attention to our interests abroad.

Clayton Conrow followed with an interesting address upon "The Advantage of Rotation in Crops." It was odd, he said, that this feature of farming should be a subject for discussion at this time in the history of agriculture.

Rotation, however, was a matter of individual choice and con-

sideration. Different farms have different soils. Distance from market was also an important matter.

Judicious rotation of crops enabled the farmer to figure out how much help he needed—men, horses, machinery, &c.

Lack of systematic adaptation of crops to the soil and method in all branches was the cause of many failures through unsatisfactory results.

In these days of close competition, everything must be studied to bring success. Men had left commercial pursuits and become successful farmers, and why did they succeed? Because they appreciated the necessity of system as developed in their previous occupations.

Whether it would be wise to dispense with wheat altogether was an open question. He thought it would be better to raise enough wheat to supply the straw needed on the farm.

He spoke of a farmer who had an eight-year rotation, and in his case the accumulation of humus matter more than made up for the land that remained idle in his system of rotation. He also got along with much less help—men, horses, manure, &c.—than the farmer who plants all his land to but one or two crops.

Changing crops on certain land was not rotation in its strict sense. Clover should not be considered a crop in rotation. Clover is the crop that returns vigor to the soil and restores that which is taken away by other crops.

Sod represents nine tons of horse manure to the acre, valued at \$25 per acre.

Some men are not possessed of sufficient patience to carry out a system of rotation. They cannot keep a part of land under sod to replenish its vitality while they see certain products bringing good prices in the markets.

Help is one of the most important factors in successful farming. He did not approve of transient help, which was a necessity where there was an absence of system. A rotation of crops gives the farmer a knowledge of how much help he needs in advance.

He coincided with the Secretary's statement in his excellent "Crop Report," that farming is an exact science.

Arthur Haines inquired whether anyone present had a successful method of staying the ravages of the melon louse. He had made many experiments with various remedies, but had met with no success whatever.

Mr. Beans said the best thing he had tried yet was a mixture of bran and arsenic. It had proved almost infallible. If it continues to prove so effective in the future the depredations of insects will be reduced to a minimum, and he recently made up his mind to raise big watermelons. He raised a heavy crop of clover* and fertilized it at an expense of \$25 per acre. He planted seven acres in melons, and insects practically destroyed the crop, he realizing only \$23 per acre, less than the cost of the fertilizer used.

A sure remedy for cut-worms is wheat bran and Paris green. They eat greedily and die. It will be used very extensively during the coming year. Sandy land will develop the best qualities of the watermelon and has everything to do with their flavor, size and color.

Mr. Beans spoke in part as follows, on "How to Grow Chunky Sweet Potatoes: "

Perhaps the chunky sweet potatoes from our own county have brought 10 cents per basket more than the average form throughout the past season. It is only honest to say the chunky potato will not yield nearly so heavily as the longer one. Indeed, its appearance suggests the thought the chunky potato is a stunted potato.

The market absorbs the chunky potato more quickly than it does its longer brother. Whether it deserves it or not, there is a prejudice in its favor in all markets, not only because of its contour, but also because of a prevailing conceit that they are drier and sweeter. I suppose we have all heard of this notion, and if the consumer is willing to pay for it, it is only good commercial sense to please the buyer's fancy.

Man, barbarian, merely asks for food to satisfy his hunger and cares little for its shape. But as he rises in civilization he becomes more and more fastidious in regard to all his wants, and to-day our world wants the best man, the best machinery, the best flour, the best sweet potato. Then we all know that our county has a larger share of drift or pine land and soils than any of her sister counties. Yet Burlington county, just as she is, is entrusted to her citizens to take care of and make better.

I went among my neighbors for the "how." John Plasket planted a part of his sweet potatoes with manure in the row, and also broadcast—a part manured in the row only. The broadcasting increased the yield two baskets per one hundred hills, but they were much

longer, rougher and unsightly. John Mitchell dug up part of his apple orchard and planted across the excavations. He expected, but did not find, longer potatoes in the loosened earth. Andrew Hackney plowed shallow for his sweet potatoes, and an adjacent area deeply for corn. He enlarged his sweet-potato patch by taking in a part of the deeply-plowed corn ground. There was no difference in the shape of the potatoes on the two plots. This season his potatoes on newly-cleared land were larger than in his old fields, but all sold above average prices. Frank Perkins always found where rows crossed even slight depressions on sandy land the potatoes were longer and less desirable. L. Tomlinson, not having enough plants of his own, purchased some of his neighbor. Side by side his own plants produced long potatoes like the seed. The ones purchased were short as those from which they originated. The present season he planted part over manure well rotted in the hill, the balance with phosphate alone. Those with phosphate yielded very much less and were longer, with thick, dark skins. The others were of best quality and appearance. There are many farmers in this vicinity that send choice potatoes to market. Several testify that in depressions and at base of slopes where sediment is deposited by rains, and possibly the presence of more moisture, potatoes grow longer and more unsightly.

Leaving out of consideration yield and profit, and looking only to quality and beauty, the chunky potato, endowed with all the virtues of its kind, is most likely to be found in the coarser sands with sub-structure that permits the rains to percolate away freely. The manure, a part of which was sufficiently decomposed to be immediately available, placed in the hill so that the inserted plant may at once enter upon its life work, which, when completed, may be a concentrated, compacted achievement, the result of which carefully gathered and forwarded to our cities to receive glad welcome from salesman, dealer and homes, however fastidious they may be.

The testimony of nearly all was that heredity or seed was influential on form. Many thought the tendency of some land was to lengthen potatoes.

FARMERS' INSTITUTE.

On January 29th and 30th, 1895, a very successful Institute was held at Moorestown, under the auspices of the State Board of Agriculture. Franklin Dye, Secretary, Director. A condensed report by the Acting Secretary, George L. Gillingham, will be found below :

The two-days' Farmers' Institute, held at Moorestown last week, under the management of Franklin Dye, Secretary of the State Board of Agriculture, was a splendid success, the attendance being far in excess of the expectations of the local committee.

The topics discussed were all of local importance and were given close attention. These being interspersed with recitations, original and selected, by local talent, made the session very pleasant to all who attended.

The Institute was opened on Tuesday morning with a few appropriate introductory remarks by Edgar Conrow, of Moorestown, who introduced Franklin Dye, Secretary of the State Board of Agriculture, who assumed the duties of presiding officer, after responding to Mr. Conrow's address of welcome. He also took the opportunity to explain the objects desired to be accomplished in holding these Farmers' Institutes throughout the State, the primary idea, of course, being to help the farmers to greater prosperity.

George W. Jessup, of Cinnaminson, read an exhaustive paper upon the subject of maintaining the fertility of the soil by the use of commercial fertilizers. He showed quite conclusively, by argument, comparisons and figures the economy and advantages of using fertilizers over ordinary manure.

Mr. Jessup was followed by Emmor Roberts, of Fellowship, who dwelt at considerable length upon the great importance of the judicious use of lime in connection with the fertilizers. Mr. Roberts' remarks were accorded the closest attention throughout.

Howard G. Taylor, of Riverton, read a very able and interesting paper on "Farming as a Business, Compared with other Vocations."

He referred to the farmer aptly as a manufacturer who prepared commodities from the soil, the primary raw material, and from food judiciously used in making bone and sinew and flesh of his animals.

Mr. Taylor laid great stress upon the value of education as an invaluable part of the equipment for a successful farmer. His work covers such a wide scope, embracing chemistry, botany, the elements of soil and their renewal by fertilization, that a thorough education is imperative if he expects to keep up with the procession and secure the best results.

Prof. H. E. Van Deman, of Virginia, late United States Pomologist, talked at the afternoon session upon "Diversified Horticulture." He strongly urged and advised farmers to raise more fruit instead of

so much grain, stating that a farmer selling fruit is disposing of a goodly proportion of water which had not reduced the fertility of his soil to any such extent as when growing grain and other similar crops. He also favored trimming fruit trees for the best results.

Emmor Roberts also spoke briefly upon the subject of raising fruit, and advocated the use of gas lime on fruit trees for the extermination of fungus, black knot, &c., as the gas is death to all such diseases.

William B. Lippincott's paper on marketing fruits and other products, was very interesting, containing many valuable hints. He considered quality of the greatest importance in bringing profitable returns. He also advised all farmers to sell their own products whenever practicable, aiming to attend the markets regularly the year around.

Edward Harmer, of Moorestown, read a valuable paper upon "The Farmer of the Future." In his judgment, the future farmer will be an educated man. He will be well up in knowledge and scientific research. He will farm on the "intensive" plan, packing and marketing his products in such a way as to bring the best possible prices.

In the evening, Miss Laura Holmes, of Clarksboro, opened the session with a very interesting and instructive original essay upon "Woman's Responsibility," and at its close was the recipient of well-merited applause.

Miss Anna Holmes, of Moorestown, recited "The Woman Poet."

Mrs. Tacie A. Lippincott, of Fellowship, read a very interesting and encouraging paper on "The Dignity of Farm Work for American Women."

William Stackhouse, of Medford, recited "The Modern Cain."

Prof. Van Deman read an excellent paper upon "Landscape Gardening."

The morning session of the Institute on Wednesday was opened by B. C. Sears, of Orange county, New York, on the dairy question, under the head of "Dairy Management for Profit."

Mr. Sears strongly contrasted the position of the thrifty farmer and dairyman with that of the city resident, having to purchase everything he uses. His conclusions were largely in favor of the successful farmer.

Silas Betts, the widely-known milk dealer of Camden, continued the subject under the head of "The Best Cow and How to Keep Her." Mr. Betts entered into minute and careful details upon the

various methods of breeding and selection, from the results of which have been derived the thoroughbred animal. He recommended the Guernsey and Jersey as the best and most profitable breeds.

George Abbott, of Moorestown, another prominent representative of the dairy interests of the State, addressed the meeting upon "The Improvement of the Dairy ; also, Dairy Surroundings and their Important Connection with the Production of Healthy Milk."

He recommended ensilage and clover hay for making good milk, and as much cotton-seed meal as the herd will bear. He also impressed upon dairymen the great importance of absolute cleanliness, no other condition existing under which a pure and healthy article can be produced.

The afternoon session was opened by and mainly devoted to answering questions propounded by those present upon various topics pertinent to the occasion, such as fruit-culture, value of fertilization, and many other subjects of interest to farmers.

Joseph Matlack, of Moorestown, read a carefully-prepared paper upon "Soiling and Rotation of Crops upon Farms largely Devoted to the Dairy Business."

Mr. Matlack's paper was of a practical nature, dwelling largely and in an interesting manner upon his own experiences in the past. In the course of his remarks he paid a high tribute to scarlet clover, which he considered a great boon to the farmer, and especially to the dairyman.

The all-absorbing, perplexing and semi-scientific subject, "Tuberculosis," was called up for general discussion, and quite a number made remarks upon it.

The question of "Potato-Growing for Profit," was ably handled by Clayton Conrow, a well-known and successful farmer in Cinna-minson township. He treated his audience to an interesting historical sketch of the potato in its early days. He also described in a plain, matter-of-fact way his method of growing the crop and the results derived therefrom.

W. H. Wood, of Lenoka, Ocean county, addressed the meeting briefly upon "The Importance of the Honey-Bee in the Pollenization of Fruit Blossoms."

The evening session concluded with a paper read by W. W. Meech, of Vineland, on "The Best Variety of Quinces, and How to Grow Them," his remarks being mainly devoted to his own practical expe-

rience during the past twenty years, which certainly entitled him to speak intelligently upon the subject.

It can be safely said that this two-days' meeting, with its interchange of intelligent thought, well-founded theories and practical experiences of intelligent, practical men, whose lives are devoted to a noble calling, was never excelled in attendance and interest in this section, and Mr. Dye, the progressive, practical Secretary of the State Board of Agriculture, under whose management these Institutes are being held at different available centers throughout the State, should feel very proud and amply repaid for any extra labor or exertion for the deep interest and widespread attention manifested in them by the great food-producing element of our people.

Probably no other individual in New Jersey is entitled to such praise as is due to Secretary Dye for his tireless energy and never-ceasing effort in placing the State in the front rank in point of advancement in agricultural pursuits.

CLIMATIC HISTORY OF BURLINGTON COUNTY, N. J., YEAR 1894.

BY THOMAS J. BEANS.

	TEMPERATURE.			Rain and melted snow—inches.	Snow—inches.	Number of days on which 0.01 inch or more of rain fell.
	Maximum—degrees.	Minimum—degrees.	Mean—degrees.			
January.....	56	15	34.13	2.32	3.75	12
February.....	58	3	30.27	3.73	12.25	12
March.....	79	20	44.96	2.14	Trace.	9
April.....	79	22	49.68	3.54	2.75	12
May.....	88	41	62.09	12.88	.....	15
June.....	98	45	70.61	1.69	.....	8
July.....	97	50	75.90	2.05	.....	7
August.....	90	50	70.00	2.98	.....	10
September.....	92	40	68.00	7.57	.....	8
October.....	85	34	56.70	6.86	.....	11
November.....	72	18	39.70	3.86	.....	11
December.....	60	5	34.60	5.88	4.00	11
Year.....	.....	.....	53.05	55.48	22.75	127

The latest killing frost, April 16th, min. 35°; earliest, November 6th, 36°—giving 204 days for out-of-door growth of tender vegetation. The season opened so that planting could be done early.

Insect ravages were unusually harmful, extending even to heavy land, making much replanting necessary. Up to May 17th, rainfall was below normal. On May 18th, 0.99 in. of rain fell. On May 20th, 1.12 in. fall, and on the 21st, 5.81 in., with violent south-east winds, driving the rain and sand so that the foliage of young plants was lacerated, and the drifted sand piled around them was so tamped that its constrictor grasp prevented all profitable growth and after a brief survival a great part of tender plants died. From the 18th to the close of the month, there was rain nearly every day, and during those thirteen days 11.87 in. of rain fell. During our county's record of thirty-one years this has no parallel. Not only did this so pack the ground that plant-growth was futile, but it so saturated the soil that cultivation was not possible; while more eventful still, where soil was at all free, the passing through of so much water leached out the applied and available plant-food, and few crops made normal growth for a long while. In spite of farmers' best subsequent efforts the potato crop in our county was the poorest remembered. Brief but effective drouth periods during July and August lessened many summer crops and early corn, but the closing period of the growing-season was so favorable that crops of late corn, tomatoes and sweet potatoes were unexpectedly good. Winds did not destroy corn fodder as during past two years, and it was stored in good condition. Abundant rains in September (7.57 in.) supplied moisture for all late corn and tomatoes and for sowing. Mercury in shelter did not touch freezing point until November 6th, and tomatoes, egg-plants and sugar-corn were sent to market from open fields later than before noted for thirty-one years. Seldom favored with so beautiful a December for finishing the year's farm work and doing anticipatory work for next season.

THOS. J. BEANS.

MOORESTOWN, N. J.

BURLINGTON COUNTY AGRICULTURAL SOCIETY.

OFFICERS FOR 1895.—President, Henry I. Budd, Mount Holly; Vice President, Joseph Wills, Rancocas.

BOARD OF DIRECTORS.—Henry I. Budd, Joseph Wills, Clifford Stanley Sims, J. Holmes Longstreet, George M. Wells, Edward B. Jones, Joseph Bowers, John R. Jones, Thomas H. Martin, G. Frank Harvey, Henry D. Curlin.

CORRESPONDING AND RECORDING SECRETARY.—Henry I. Budd, Mount Holly.

TREASURER.—Edward B. Jones, Mount Holly.

AUDITING COMMITTEE.—Henry C. Risdon, John B. Davis, Robert B. Engle.

COUNSEL.—Joseph H. Gaskill, Mark R. Sooy.

EXECUTIVE COMMITTEE.—Henry I. Budd, Edward B. Jones, Joseph Wills, Joseph Bowers, George M. Wells.

The Forty-ninth Annual Fair will be held on their grounds at Mount Holly, N. J., on September 23d, 24th, 25th, 26th, 27th, 1895.

ANNUAL MEETING.

The forty-ninth annual meeting of the stockholders of the Burlington County Agricultural Society was held in the Court House, Mount Holly, on Saturday afternoon, January 12th, 1895.

Henry J. Irick, acted as Chairman.

Edward B. Jones, Treasurer of the Society, read the annual report, which is as follows:

TREASURER'S REPORT.

Cash received as follows:

Admissions to grounds.....	\$8,824 37
Grand stand.....	1,770 00
Hay and straw.....	37 95
Incidentals.....	169 83
Amusements.....	1,291 58
Crossing ring.....	38 00
Refreshments.....	2,076 60
Lunch counter.....	224 32
Coat and package room.....	33 77
Entrance fees for horses, &c.....	1,857 07
Pasture.....	100 00
Rent.....	167 13
Notes discounted.....	6,400 00
Guaranteed fund, spring meeting.....	260 00
	<hr/>
	\$23,250 62

Cash disbursed as follows :

Balance due Treasurer, 1894.....	\$109 05
Hay, straw and feed.....	490 61
Turnstiles.....	179 75
Amusements and bicycles.....	938 88
Bands.....	166 48
Decorating.....	50 00
Hardware, lumber and repairs.....	543 34
Labor.....	151 46
Water rent.....	60 00
Judging.....	210 00
Clerks.....	411 40
Guards and police.....	629 43
Supplies for lunch counter.....	195 98
Supplies for dining-room.....	177 92
Incidentals.....	127 22
Freight and expenses.....	57 79
National Trotting Association.....	91 00
Postage.....	180 87
Rent of office.....	50 00
Advertising.....	1,641 31
Printing.....	783 33
Interest.....	817 01
Expense account.....	749 30
Salaries.....	550 00
Notes paid.....	5,550 00
State tax.....	4 00
Protested check.....	16 50
Entrance fee refunded.....	5 50
Premiums.....	8,204 50
Balance in Treasurer's hands.....	57 99
	\$23,250 62

The report was approved and ordered spread upon the Society's minutes.

ANNUAL REPORT OF THE BOARD.

The annual report of the Board of Directors, a very interesting document, was read by Henry I. Budd, President of the Board. It is printed complete herewith :

Mr. Chairman and Stockholders—Although there may not be much of interest to report at this annual meeting, the custom of the preceding nineteen ones requires your Directors to be somewhat in evidence as to their conduct of affairs during the past year.

The extreme financial and business depression of the past two years has not only been detrimental to individual prosperity, but has worked sad havoc with millions of corporate capital. Fortunate, indeed, have been the organizations depending upon public patronage that have been able to escape with only a few hundreds of dollars of loss.

Our Directors, feeling at the start that economy would be necessary to escape loss, sought so to arrange the premiums and other expenses that a small attendance would net enough to safely carry them through; and we believe that had not our big Thursday been rainy, we would have had a better financial result than for several seasons.

Many of our stockholders have been for years pressing the Directors to hold a spring meeting. This season they decided to accede to the request, provided there would be a sufficient guarantee fund against loss. The outcome was a good exhibition of agricultural implements and many fine contests of speed, but the attendance was comparatively small, entailing a loss of \$400, which one-half of the guarantee fund mostly canceled.

Our experience has confirmed our previous belief that one exhibition each year is all that our patrons will be sufficiently interested in to make profitable.

Yet, believing that we have too much capital invested in grounds and buildings to be idle without any returns except its use for one week during the fall Fair, and seeing the great attention that is being given by all classes to athletic sports, we decided to enlist the attention to our grounds of the Mount Holly Athletic Association, an organization to purchase and improve grounds for the purpose of carrying through the season a variety of athletic entertainments. After several conferences we leased to them a portion of our grounds and buildings, they to have the exclusive use of admission gates, tracks, ring and grand stand except the three weeks before, during and after the Fair, with privilege to grade the ground inside the track for baseball and foot-ball contests. For this privilege we are to receive \$200 per year, and one-half the net receipts for admissions to grounds and grand stand.

If this athletic association meets a corresponding amount of success with similar organizations, the lease will be highly advantageous to our Society.

Our exhibits in all departments, except cattle and machinery, were

up to and in many classes ahead of previous years. Especially full and fine was the poultry display, requiring a tent for the overflow.

In Departments I and J—ladies' work and horticultural and agricultural divisions—the number of exhibits in 1893 was 4,120; in 1894, 5,794; increase, 1,674.

Our attendance was a slight increase over last year. In 1893 it was 23,312; in 1894 it was 23,761.

Our receipts from all sources, outside of notes, were—1893, \$18,691.57; 1894, \$16,850.62; a decrease of \$1,840.95.

Our expenses in all directions, outside of notes, were—1893, \$19,472.82; 1894, \$17,642.63; a decrease of \$1,830.19.

Our principal receipts and expenses were:

RECEIPTS.

	1893.	1894.	Increase.	Decrease.
Entries.....	\$3,231 05	\$1,857 07	.....	\$1,373 98
Admissions	6,922 65	8,824 37	\$1,901 72	.....
Grand stand	1,796 25	1,641 00	.....	155 25
Privileges.....	6,973 21	3,538 01	.....	3,435 20

EXPENSES.

	1893.	1894.	Increase.	Decrease.
Advertising and printing.....	\$1,898 03	\$2,424 64	\$526 61	.....
Premiums.....	10,733 59	8,204 50	.....	\$2,529 09

Amusements cost \$434; bicycle contests, \$554.88.

Our dining-room for committees and guests gave 810 meals at a cost of \$172.52, or 22 cents apiece.

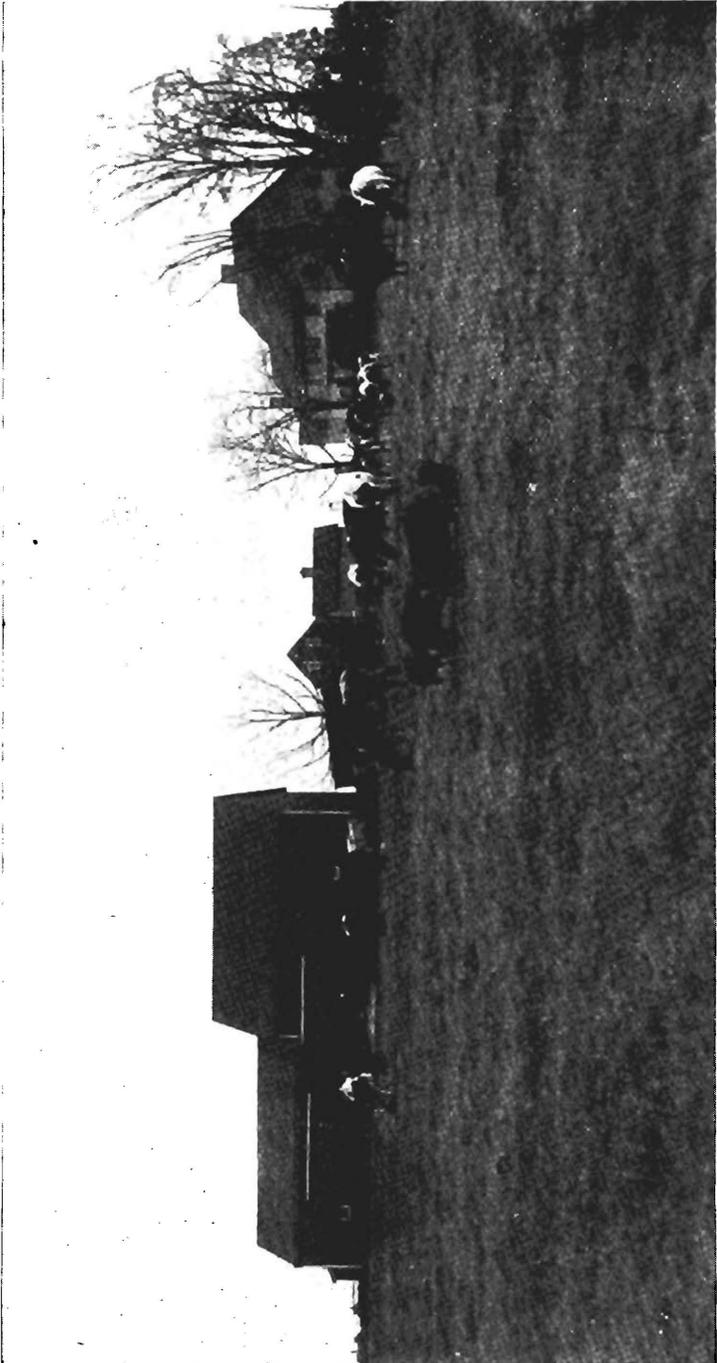
The lunch counter cost \$195.90 and returned \$224.32, a profit of \$28.34; and gave 1,123 tickets for coffee and rolls to employes and exhibitors at a cost of about four cents for a roll and cup of coffee.

With improving trade conditions and a general resumption of suspended industries, we hope our successors will be able to gather enough shekels to place your favorite institution upon the highest plane of prosperity.

The report was accepted without discussion and ordered spread upon the minutes.

A vote of thanks was tendered the Board for their services.

You Are Viewing an Archived Copy from the New Jersey State Library



Farm Scene in Camden County, N. J.

CAMDEN COUNTY.

OFFICERS FOR THE YEAR 1895.

<i>President</i>	ISAAC W. NICHOLSON.....	Camden.
<i>Vice President</i>	CHARLES C STEVENSON	Blackwood.
<i>Secretary</i>	RODOLPHUS BINGHAM	Camden.
<i>Treasurer</i>	NATHANIEL BARTON.....	Mt. Ephraim.

DIRECTORS.—E. Cooper Morgan, Amos Ebert, Frederic Sleeter, R. Lewis Shivers, and Ezra C. Bell.

DELEGATE TO STATE BOARD (two years).—R. Cooper Morgan.

ANNUAL REPORT.

The Camden County Board of Agriculture has held two meetings since the last annual report.

A special meeting was held February 20th, 1894, at ten o'clock, in the Town Hall, President Isaac W. Nicholson in the chair. The meeting was called as had been done the year before, to discuss the production and relative values of milk. As was stated in printed notices announcing the objects of the meeting, farmers were requested to bring a quantity, four ounces, from one milking for the purpose of analysis, with a view of determining relative values in butter fat. In response to this call thirty-five samples of milk were brought and analyzed by Marshall & Cochran, chemists, of Philadelphia. While this process was going on, Amos Ebert, by invitation, made extended remarks on the subject of fertilizers and their economical preparation by farmers at home. This was followed by a general discussion, a number present taking part, and afterwards President I. W. Nicholson gave an address on the condition necessary for successful dairying, showing the degree of skill necessary at the present time to conduct a business with profit which involves a knowledge of the principles of feeding, as conducing to animal nutrition.

A recess till 1:30 P. M. was then taken. The greater part of this session was occupied with discussing different feeds and their relative values chemically and in their effect on cows as variations of diet. After the completion of the analysis of the milk the result was announced, and occasioned some surprise, without, however, exciting any doubt of its accuracy. This analysis and the discussion attending it, brought out the fact that great care should be exercised in the selection of sample quantities of milk.

During the afternoon session the circular issued by the State Board on the subject of granting franchises to trolley roads occupied considerable time, and was discussed at length.

This subject, it was generally admitted, demanded attention from the farming community, through whose lands these lines of travel are likely to pass, and that they should be cautious in the granting of the privilege of the public highways for a road-bed.

A resolution to request the State Board of Agriculture, at its next annual meeting, to employ a competent speaker to address the Board on the "Demonetization of Silver and its Effect on Farmers," was introduced, and occasioned a spirited discussion, but was finally voted down, though exciting much interest and bringing out some new points to the members present.

The annual meeting of the Board was held in the Town Hall, Haddonfield, November 27th, 1894.

After the usual business and the election of officers, the following address was read by the President :

A retrospect of the past year will show a most unsatisfactory return for the labor of the husbandman. The elements, together with the unusual dullness of the times, have been conducive to an abundant cost in production of the crops, and the returns for these crops have been for the most the lowest within the recollection of any of us. The demand for the most economical management of our affairs will continue for several months to come. The meetings should be of the greatest benefit in helping each other to economical and practical ways in the management of not only the stock, but the farms also. It is not given to anyone to know everything, and if it was there would be a great responsibility resting upon him to communicate his knowledge for the benefit of mankind. The responsi-

bility is resting upon each one to impart something for the others' benefit, be it ever so small. In a less degree, such being the case, let us see if we cannot at this meeting devise something that will be of mutual benefit to all here.

There is more interest in these meetings than formerly, yet greater interest would be very beneficial. With ideas which are practically but little understood, or not as well as should be, and which we as farmers know almost nothing, hence the necessity of more information in order for the protection of our properties from unwise ordinances and legislation; a short time may develop something that may be of incalculable benefit to a large number in the county. Both national and State governments are trying to solve these questions for the benefit of their citizens. Such organizations as this should keep us as well posted as possible in these matters for their own interest as well as protection. The time for criticising book-farming has passed, and all accessories to knowledge in our calling are eagerly sought for by the most successful farmers.

The past year, under the auspices of this Board, a course of agricultural lectures was given by Prof. Halsted upon botany, which was pretty well attended, a few ladies by their attendance showing their interest in the subject of such importance to them in their cultivation of the beautiful.

As dairying is an important industry in this county, a meeting was held in this hall, where samples of milk were analyzed and the results read out before the meeting. The rearing, feeding and management of dairy stock were very generally commented upon, and it was probably one of the most interesting and instructive of these meetings.

Essentially the same problem confronts the dairyman producing milk to be consumed in the markets and the one making butter of his product. It is necessary to economize in the production by carefully feeding well-balanced rations. For the purpose intended, remember the cow which produces the largest yield of butter does it at the least cost per pound. Cows should be tested thoroughly separately, and no cows kept that are not profitable to the owner. Even if half the herd should be sacrificed, the other half then would be profitable to the owners.

CAPE MAY COUNTY.

OFFICERS FOR 1894.

President..... DR. E. H. PHILLIPS.....Cape May City.
Vice President..... A. J. TOMLIN.....Goshen.
Secretary..... H. L. SABSOVICH.....Woodbine.
Treasurer..... VOLNEY VAN 'GILDEB.....Ocean View.

BOARD OF DIRECTORS.

A. B. WALTERS.....Cold Spring, Lower Township.
FRANK HARRIS, ESQ.....Burleigh, Middle “
HOLLIS P. MICKEL.....Petersburgh, Upper “
A. STRATON, ESQ.....Beesley's Point, Upper “
JOHN BROWN.....Erma Post Office, Lower “
HON. F. LUDLAM.....South Dennis, Dennis “
JOHN BRAMMEL.....South Seaville, Dennis “
JOHN REEVES.....West Cape May Borough.

DELEGATES TO STATE BOARD.

H. L. SABSOVICH (two years).....Woodbine.
DR. E. H. PHILLIPS (one year).....Cape May City.

REPORT.

BY H. L. SABSOVICH.

About one year ago, December 15th, our County Board was organized under the auspices of the Executive Committee of the State Board of Agriculture, at Cape May Court House. The meeting was organized by the Secretary of the State Board, Franklin Dye, who made an address, outlining the condition of agriculture throughout the State, and showing the beneficial results following when farmers of a neighborhood or county organize and co-operate with each other for the improvement of practical agriculture.

MEETINGS.

The regular meetings of the Board are held at Cape May Court House on the third Saturday of January, July and October, and the annual meeting on the third Saturday of March.

The subjects discussed were :

“Market-Gardening—Its Possibilities and Requirements for Success”—by Theo. F. D. Baker, Bridgeton, N. J.

“Manures and Their Uses,” by Prof. E. B. Voorhees, of the State Experiment Station.

“Insects Injurious and Beneficial to Agriculture,” by Prof. John B. Smith.

“Tomato-Raising for Canning,” by Thomson Van Gilder, of Ocean View.

“Hot-Bed Managing,” by Amasa B. Walter, of Cold Spring.

“Raising Vegetables for Local Markets,” by Frank Harris, Esq., of Rio Grande.

Besides these subjects, a detailed report of the proceedings of the State Horticultural Society and the State Board of Agriculture was made by the Secretary, as he was delegated to attend the annual meetings of both.

It is not necessary to summarize the lectures of the able Professors of our Agricultural College, as they are widely known all over the State. I want only to say that both have laid great stress upon the necessity of organization among the farmers in order to fight the injurious insects, as well as in purchasing and mixing of the artificial fertilizers.

CONDITION OF AGRICULTURE.

With the exception of the sweet potato and the late tomato crop for canning, all other crops in field, garden and orchard have suffered severely from a cold spring, hot and dry summer and wet autumn. It seems that the elements of nature have conspired against the farmers of our county.

Potatoes.—Early potatoes have been planted as early as in the latter part of March, but heavy frosts and stormy weather after the 27th of March up to the middle of April, interrupted the planting

of early potatoes. We had during these weeks plenty of rainfall, we thought sufficient for the whole growing-season. The damage caused by these heavy rains and frost to the very early potatoes is estimated to be about 25 per cent. The cold checked the growth of the potato, and it seemed the potato-bug, too, but the severe drouth during June, July and August favored the growth of the bugs to an extent not seen for many years. Besides the bugs, the blight also helped to reduce the potato crop in quantity and quality.

The white varieties have suffered the most. Some of our farmers along the seashore have mulched their late potato fields, and have succeeded in getting quite a good crop. The average yield of potatoes, as compared to a good year, is about 75 to 77 per cent., with about 85 bushels to the acre. The highest yield is about 150 bushels, the lowest 50 bushels. The average price is about 64 cents. The price could not be high, regardless of short crop, first, because the quality of the potato is inferior, and then the purchasing power of the consumers has been lowered during the bad times prevailing now all over the country.

Corn.—Though we have not been worried with replanting of corn on account of wire-worms, the heavy rains in May have flooded over many fields on low land. The sweet corn, and also the early-planted field corn, were attacked by the corn or ball-worm. While the early-planted corn had suffered from the drouth just during the period of forming the seed, the late corn has been benefited partly by rains in fall. The average yield is about 71.5 per cent., or 30 bushels to the acre, the minimum yield being 50 per cent., or 20 bushels to the acre, the maximum, 100 per cent., or 40 bushels. The average price for the new corn per bushel, 55 cents.

Oats.—The spring was favorable but the smut reduced it to about 25 bushels to the acre, or about 77 per cent. of a good crop. The price is about 44 cents per bushel.

Wheat is discarded in Cape May county.

Sweet Potatoes.—This crop could be the most remunerative if the prices were better. One dollar per barrel is a killing price. Mr. Louis Wheaton, of Court House, has raised 200 barrels per acre. Mr.

Tomlin, 100 barrels per acre. The lowest yield is 40 to 45 barrels, and the average about 60 barrels.

Cabbage.—The early cabbage was retarded by the cold May and dry June. The cut-worms have been unusually troublesome to the cabbage; the last three times replanted. Egg-plants and strawberry plants planted near the cabbage have suffered as well from the cut-worms.

Late Cabbage fared much better. The yield is about 90 per cent., or 3,000 marketable heads to the acre. The price was moderate in the local market, from \$4 to \$5 per hundred, while in the Philadelphia market from \$1.75 to \$2.50 per 100 heads.

Watermelons.—The crop can be estimated to be about 65 per cent.; about 400 to 500 primes, at \$10 to \$12 per hundred.

Citron-Melons.—The muskmelons have yielded a full crop, some reporting 500 and 1,000 baskets per acre, and, again, some as low as 125 to 200 baskets; while the prices varied from 15 to 40 cents per basket. The estimated average yield and price are 400 baskets and 25 cents.

Cucumbers.—Information about this crop is varied. Judging by our crop in Woodbine, I would estimate it at least 400 baskets to the acre. We have shipped them to Atlantic City, realizing from 20 to 35 cents net, an average of 25 cents per basket.

Egg-Plants have yielded quite well, from 500 to 1,000 baskets per acre, and sold at about 25 cents per basket. The egg-plant deserves more attention.

Tomatoes.—About 500 acres have been planted for our two canning establishments in Ocean View and East Creek, and for the market. The early tomatoes were caught by the cold weather in May and could not ripen before the 4th of July. In the northern section of the county the corn-worm had almost ruined the early tomato crop. I had a field of about three-quarters of an acre in early tomatoes. Before I could send any to the Atlantic market I picked dozens of baskets damaged and deformed by the corn-worm. The late tomato crop for canneries turned out a good average of 7½ tons to the acre.

In 1893 the average yield was only 6 tons. Mr. Hand had raised 10 tons. Messrs. Wheaton, Van Gilder and J. C. P. Smith 8 tons to the acre.

Onions.—The sandy loam of this county is well adapted to raising onions for bulbs and sets. Mr. Royal, of North Dennis, had raised as high as 800 bushels of bulbs to the acre. I had made a trial to raise onion sets for David Landreth & Sons, of Philadelphia. I have tried on 9 quarter-acre plots, on different soils of our 5,300-acre tract. Regardless of the unfavorable year, these quarter-acre plots have yielded from 20 to 30 bushels, or at the rate of 100 bushels to the acre. If we take into consideration the mechanical state of our soil (the third plowing since cleared of wood), the unfavorable weather, the onion maggot, the newness of the crop, absence of means of suitable storage over the hot weather in August and September, the results are as favorable as 175 bushels to the acre would be on well-prepared, long-tilled land, and cared for by experienced hands. I understand that the onion crop in general (sets) is not over 175 bushels to the acre this year.

With more experience and better condition of soil and climate, I expect to raise 150 to 175 bushels per acre next year, and old farmers could probably raise from 175 to 200 bushels. The expense amounts to say \$25 for fertilizer and the same for work, while the gross yield and income in the worst cases will be 100 bushels at \$1 per bushel, though good sets bring \$1.25 to \$1.50 by the contracting firm. If the grower buys his own seed, the expense will be increased by \$75 for 75 pounds of seed, and the income at least by \$100, as the lowest price paid thus far was \$2.50 per bushel.

In regard to fruit-growing, our county seems to be behind many other counties in the State. Small fruit is rather neglected. Our soil is able to produce good crops of strawberries. This year's crop is about 90 per cent. of a good average year, with about 2,200 quarts per acre, sold at the average price of 7 cents per quart. A. B. Walters, of Cold Spring, had raised 2,000 quarts to the acre, at 8 cents per quart; Van Gilder Brothers the same, and Mr. Hand, of North Dennis, 3,200 quarts, at 9 cents per quart. In Woodbine one-half acre of strawberries yielded 1,600 to 1,800 quarts, at average price of 6 cents, the highest price 10 cents, the lowest 4 cents per quart.

The information about black and raspberries is very meager; it seems that they are raised but little. The same is true of grapes. The 30,000 grapevines planted in Woodbine did not bear yet, and I am unable to report what they will do.

Peaches seem to be in very little favor with the Cape May farmers. The yield was reported to be from 5 to 10 per cent. of an average year, and the price per basket from \$1 to \$1.10.

Apples and Pears are about 10 per cent. for apples and 50 per cent. for pears, with prices of \$2.50 and \$3 per barrel, respectively.

Hay.—Having plenty of marshy land, our county is raising plenty of salt hay, black grass and sedge. These kinds of hay are used for bedding and as fodder for cows and horses. Nevertheless, timothy and clover are raised quite largely. The last year the annual crimson clover has become quite a favorite with many of our farmers. It is expected that it will remain a welcome member in our crop rotation. The reported average yield of timothy is about $1\frac{1}{2}$ tons; of clover, 2 tons, and of mixed hay, $1\frac{3}{4}$ tons per acre; exceptionally good yield of hay, 3 to 4 tons.

DAIRY.

Very little dairying is done for the general market. There are no creameries, and butter is home-made, and sold in the local markets at an average price of 25 to 30 cents per pound. The price of milk, wholesale, 4 to 5 cents; retail, 6 to 8 cents per quart.

Jersey grades seem to be preferable for the uses our farmers are making of their milk. Guernsey and Alderney grades are mentioned also. The butter cow is considered by the Cape May farmers as the most profitable.

Wheat bran, middlings, corn meal, and sometimes cotton-seed and linseed meal, are the concentrated feeds added to the usual corn fodder and hay. The rations are in many cases equal parts of bran and meal, say 4 quarts of bran and 4 quarts of corn meal; in some, $4\frac{1}{2}$ pounds meal and $2\frac{1}{2}$ pounds bran; 2 quarts bran, 1 quart middlings and 1 quart corn meal; 1 bucket roots, 12 pounds Indian meal and 6 pounds bran in two meals. Only one silo is reported in the county, that of Dr. Phillips, of Cape May City.

Only about 25 percent. of farm-working stock is raised in the county. The cost of an average good, young (six years old) working horse is about \$100, and of a mule \$125. No prevailing diseases.

POULTRY AND EGGS.

Our self-drained, sandy-loam soil is adapted for poultry-raising. Some farmers are growing poultry for market quite extensively, and the production of eggs for home consumption and local markets. Discouragements named are low tariff on eggs, diseases, bad times followed by low prices. I should think that if the purchasing power of the city consumers would not be lowered, the poultry and egg market would command higher prices. I think that a more judicious feeding and clean and warm quarters would increase the profit of the poultry-raiser, regardless of present low prices. The prices for eggs per score are an average of 30 cents. Spring chickens, alive, have been sold in spring and summer from 18 to 25 cents per pound. Live fowl in fall, from 7 to 10 cents per pound.

As I have mentioned before, fruit-growing is neglected. The reasons ascribed can be classified as follows: Limited market, costly transportation, dishonest dealers, and insects and fungous diseases.

Some of these could be made inoperative if our farmers could be persuaded that absence of unity in action is the main fault with them. We could avoid the necessity of dealing with middlemen if we would have our exchanges in the big cities and summer resorts. But we will rather distrust each other, and submit to the dictation of the dishonest middlemen. And again, there is no use to fight an insect pest or fungous pest single-handed. These should be considered as cholera or any other epidemic, when the State, county and local communities find them necessary to fight systematically and in concert, using the coercive power of the law.

Not to be forced to sell our products at the time when the market is glutted, it would be advisable for farmers' organizations to build cold storage houses for fruit—for instance, sweet potato houses, public vin cellars, and in general to endeavor to send to the market less raw products.

The question of farm help is often discussed, and it is important. Regardless of hard times, it seems that farming has so little attraction that people prefer to half starve in cities and not to work on farms.

Most of the correspondents to whom circulars have been sent by request of the Secretary of the State Board are complaining in regard to farm help—male and female. With a few exceptions, the statements read are “rather scarce,” “difficult to obtain,” “not enough help,” &c. The reasons given are: Low wages, hard work, indisposition to work, dullness of farm life. With \$10 to \$12 per month in winter, and \$15 to \$18 in summer, with board, and \$25 to \$30 per month, and \$1.25 to \$1.50 per day in summer, without board, men could not make a comfortable living, or rather as enjoyable, as with the higher wages in cities. It is probably true. But if farming life could be made more attractive by the aid of social organizations, reading and debating clubs and so on, I think that there would be less complaints in regard to farm help and deserting of farm work by the sons and daughters of the farmer.

Though Cape May county cannot rank with the first-class farming counties of the State, its soil and climate are such that it can be made so.

Our spring opens at least ten to twelve days earlier than in the upper counties. The fall is a long one, the winter is mild, and almost the whole year around one can work in the fields. The soil is not only adapted to raising early and late truck for the market, but also for seed-raising. The soil generally does not pack, and can be easily tilled and kept loose.

This county is bound to become a farming one, as the old occupations, following oystering and fishing, and cultivating timber for fuel, are declining. New industries are introduced very slowly. There is some industrial employment in Woodbine and in the West Creek paper mill. The ten to twelve weeks of earnings in Cape May City, Sea Isle City and other summer resorts are not sufficient for fifty-two weeks. Naturally, farming will become the main occupation for most of the Cape May county inhabitants.

To secure some safe future for our farming interests, the people of our county should become interested in agricultural and industrial education, and introduce their study in their public schools. Then, a young generation, educated in our improved public schools, will be able to meet the hardships of life and to appreciate the pleasant sides of farming life.

CRIMSON CLOVER.

Crimson clover, so ably advocated by Prof. Voorhees, will become soon the most reliable crop for green manure, hay and pasture. The reports are excellent. Mr. L. Wheaton, of Court House, writes: "I raised this year corn that yielded at the rate of 75 bushels per acre on a sandy-loam soil, with a crimson clover sod and a dropping of stable manure 15 tons to the acre. I consider crimson clover as the cheapest and best fertilizer that can be used in this section of the country. For newly broken-up land it is a Godsend. As an intermediate crop, which involves a maximum expense of \$1.50 per acre (15 pounds) for seed and no extra work, as the seed is worked in during the last cultivation of corn, tomatoes, &c., it is certainly the cheapest fertilizer. If we apply some potash salt and phosphates at the time of sowing the clover, I think it will save us the trouble and expense of further manuring and fertilizing at planting corn or any other crop after the crimson clover is turned under. I have raised about 2,500 marketable heads of late cabbage upon crimson clover sod without a drop of fertilizer or barnyard manure. The cabbage was planted in a field which was broken up in 1892, and would not yield otherwise 1,500 or 2,000 marketable heads. Tobacco and mangel-wurzels have been grown with equal success on another piece of crimson clover sod. The crimson clover is the best cover for our light soils over winter.

Crimson clover and some artificial fertilizers, especially potash and phosphate salts, say 150 pounds of muriate or sulphate of potash and 600 pounds of bone meal, will well substitute barnyard manure, which is inaccessible for many farmers.

METEOROLOGICAL OBSERVATIONS FOR THE PAST YEAR, DECEMBER,
 1893, TO DECEMBER, 1894, AT WOODBINE OBSERVATION STATION.

MONTHS.	TEMPERATURE.			Precipitation in inches.	Prevailing wind—direction.
	Maximum.	Minimum.	Mean.		
1893.					
December	50.50	26.60	38.55	2.09	W.
1894.					
January	45.00	26.50	35.75	3.03	W.
February	42.00	23.00	32.80	4.16	E.
March	57.50	32.50	45.00	1.22	S. and W.
April	59.70	37.20	48.45	2.78	N. and W.
May	72.30	51.80	62.05	8.89	S. and W.
June	80.00	59.25	69.67	2.17	W.
July	85.50	65.20	75.35	.29	W.
August	79.80	59.00	69.40	2.20	E.
September	77.53	58.73	68.13	11.65	N. E. and S. E.
October	65.20	46.30	55.75	6.83	N. E.
November	49.93	31.83	40.88	3.03	W.
Sums	764.96	577.91	641.78	48.34	
Means	63.75	43.16	53.50	4.03	

Out of the 365 days, 174 were clear, 106 partly cloudy and 85 cloudy, and 103 days on which .01 inch or more precipitation fell. The greatest precipitation in any twenty-four consecutive hours during the year happened on the 19th of September, namely, 5.5 inches, and next to it on the 20th and 21st of May, 4.8 inches.

The highest temperature was observed on June 23d, 96 degrees F., and July 28th and 29th, 95 degrees F., and July 13th, 14th and 16th, 93 degrees F.

The lowest was 3.5 degrees F., on the 25th of February.

The latest frost struck on the 30th of April, the earliest on the 11th of October. This makes the length of season for out-of-door growth of tender vegetation 164 days; while for such crops as onions, potatoes and peas, about 200 days.

While the comparatively cold and wet May had retarded the growth, the dry June and August and the very dry July have checked it. Only the wet September came to relieve us from the unfavorable early and midsummer.

In regard to the new School law, though in principle it is quite an improvement over the old district system, as concentrating the control over our public schools, the public opinion in the county seems to be rather against it. The reasons given are :

It takes from the people home rule.

It makes the whole township pay what the people of each district should pay.

It gives one Clerk for a whole township, making it cost the township more than the old plan.

Gives the school districts far less care.

If 25 cents is to be laid out, a school meeting must be held, necessitating the driving of eight or ten miles.

When a teacher wants an order he or she must go from three to nine miles to see the Clerk, and then go or mail to the President of the Board to get his signature.

We can expect that the people will be dissatisfied with the new School law already, because it is an innovation, and then the interests of different districts could not be the same and cannot be for some time, especially in the case of bonded districts. The Trustees elected are, naturally, working yet under the old strain, looking principally after the interests of their own district school, caring little, if at all, about the other eight or ten schools. It is hoped that when the law has been in operation some time, and the interests of every school in the township become the interests of the whole township, the advantages of the new law will come to the front. I am convinced of the ultimate good of the new law, though my place—Woodbine—became the first victim of it, having been left without any representation at all, though it has one-fourth of all children of school age in Dennis township.

If the law should be amended, it ought to be amended so that every school should have one representative in the board.

TOMATO RAISING.

BY THOMSON VAN GILDER

The tomato is a shining example of the result of evolution. From a despised and neglected foreigner, it has become one of our most respected citizens. And its improvement has been very rapid. From a few plants grown not many years ago, as much for curiosities as anything else, the love apple of that time has come to be cultivated over widely-extended areas, and has taken an important place in the long list of good things to eat. The middle-aged man of to-day remembers perfectly well how, when a boy, the majority regarded it with aversion, and the idea of eating it created a feeling akin to nausea. But familiarity did not breed contempt in this case, but rather a fondness for it, until now everybody eats it. The babe of to-day is born with an hereditary liking, and the children, as they do for "Castoria," cry for it. It is found on almost every table in the land, not alone during the growing-season, but through the efforts of the canners is made available at all seasons and in all climates. The many ways in which it can be prepared—all palatable—render it an especially valuable article of diet.

The important thing with us to-day, however, is how to produce the most of it at the least cost, and how to get the most clean cash out of it after it is produced—questions calling for the most careful consideration both in its production and disposal. After selecting the variety you wish to grow (and there is a long list from which to choose, all possessing peculiar features of their own, fitting some for one purpose and some for another), and you succeed in getting a prime article, don't depend any further on the seedsmen, but save your own seed from the choicest specimens you grow. Buy your seed, and you don't know what your crop will be like. It may be what you want, and it may not, with the chances about equal for one thing or the other. Of course, for an early crop the hot-bed or hot-house must be used, and plants can be kept there even so late as the blossoming stage if the weather conditions are unfavorable for an earlier setting. If a later crop is the object aimed at, the plants can be grown in the open air by simply plowing furrows, filling with manure from the barnyard, covering with the plow, and sowing the seed on the ridge with a drill. But this plan leaves them exposed to the late frost, and they are apt to be rather late. A better way is to sow the seed in

CAPE MAY COUNTY.

cold frames. Where the space required to contain them can be greatly condensed, they can be easily protected from the frost and the attacks of the omnipresent and omniverous potato-bug, who "knows a good thing when he sees it," and who sees it in the young and tender tomato plant. Do not sow too thickly, or the plants will be tall, spindling and weak. They stand better if they are short and stocky. It's during the earliest stages of growth that the potato-bug puts in his "biggest licks," and he must be taken care of. Our own plan has been to pick off by hand the grown beetles until the slugs appear. Then hand-picking will answer no longer, but sterner and more rapid means must be employed. By this time, however, the plants have become tough enough to bear a weak solution of Paris green. A half-teaspoonful to a gallon of water sprinkled over a row 200 feet long will be found sufficient to "do 'em up." The bug rarely attacks the plant after it is large enough to put in the field.

As to manure, almost anything will do. They are gross feeders, and there is but little fear of giving them too much, but, of course, some kinds suit them better than others. They fairly revel in the richness of the hog-pen, while the application of sufficient quantities of barnyard manure and commercial fertilizers, high in ammonia and potash, either separately or in connection with each other will produce great crops. But if you use barnyard manure, don't put it in the hill, but scatter it broadcast. Manuring in the hill would answer very well were we assured of plenty of rain, but a big wad of coarse manure directly under the plant is very trying during a drouth; and drouths are what we have mostly to contend with. We are burned ten times where we are flooded once. An application of from 150 to 250 pounds per acre of nitrate of soda is highly recommended after the vines have become well grown, but care must be taken to prevent it from coming in contact with the foliage. Have your lands well plowed and pulverized when setting-time arrives and checked off at proper distances. Four and one-half feet each way is a very good width. Now don't go to the field with nothing but your fingers, a paddle or garden trowel and go plodding along the rows with bended back, throbbing brow and aching spine, but secure the services of a boy to drop, arm yourself with a narrow-bladed spade, thrust the spade with the foot down into the earth where the plant is to stand, and with a forward and backward motion of the handle open the hole wide enough to admit the set;

withdraw the spade and let the boy drop in the plant, then with the toe press the soil firmly around it and go on to the next. In this way you can do it faster, easier and better than you can to get down on your knees at the expense of your breeches and your back. Do not set in the forenoon. If you have nothing else for the men to do, you had better pay them to lie in the shade of some friendly tree than to set tomato plants in the morning. Some plant the seed in the field where it is to grow. But there are grave objections to this plan.

The seed are slow to germinate and grow very slowly while young, and before they get up so they can be seen to tend, the grass has taken them—all that the bugs have left. All locations are not favorable to their growth. It isn't much use to put them on the hilltops. They will grow some, to be sure, but will thrive much better in moderately-low ground.

With thorough cultivation and a fairly-favorable season, we can confidently expect a reasonably good crop of from eight to ten tons per acre. After the crop is grown the pertinent question arises, What is to be done with it? To grow it is one thing, how to dispose of it quite another, but equally as important. We are barred from the city markets by railroad and commission merchants' charges. After they have had their whack at it there is nothing left for the producer, and he is pretty lucky if he isn't presented with a bill for arrears of freight. To a casual observer it would seem that we had a market at our very doors, but these seaside towns take but a small portion of this crop at paying prices.

The best thing we can do is to devise ways to improve our market. The establishment of canneries would afford partial relief and aid materially in transforming our county into a vast vegetable garden, for which it is well calculated, both in soil and climate, to become. To see her such is the ardent wish of every lover of our fair county, who sympathizes with her in her adversity and rejoices in her prosperity.

CUMBERLAND COUNTY.

OFFICERS FOR 1895.

President.....SHERMAN T. DOWLER.....Vineland.
Treasurer.....T. F. D. BAKER.....Bridgeton.
Secretary.....WM. S. BACON.....Greenwich.

REPORT.

The past season has not been a prosperous one generally with the farmers of this county. In the spring and early summer the unprecedented rainfall did much damage to early truck and vegetables, and in many instances delayed planting till an unseasonable time. The drouth that followed materially affected fall crops, making the averages below an ordinary year. Coupled with this the business depression that has swept over the entire country, has had its effect on the prices of farm products, still further reducing the returns on crops that are already short. These unavoidable conditions have too often placed the balance on the wrong side of the ledger, even with the best and most careful farmers—but there are some exceptions.

The tomato crop for the canneries was a fair one, and the price per ton higher than for several years; the berry crop was a good average, although prices were not up with previous years. These two crops are important ones to our farmers.

Berry-growing has been carried on extensively in Vineland for a number of years, and has now spread over the larger part of the county, and we claim to produce as fine berries as can be found in any market.

May 31st, a Strawberry Fair was held in Vineland under the direction of the Board of Agriculture, the object being to bring together new varieties and compare their merits. The display was creditable, and some new seedlings were placed on exhibition that apparently are deserving of further notice.

There are fourteen canning establishments in the county, where the product from four thousand acres of tomatoes has been packed the present year. Eight tons per acre is considered an average yield.

The peach crop has been an entire failure, and it is the prevailing opinion that the time is past when this luscious fruit can be successfully grown in this section. Very few new orchards are being set and the old ones are fast disappearing.

The acreage sown in wheat this fall is much less than heretofore, probably not more than half.

At present there is little difficulty in securing enough help for the farm at \$15 per month with board, but for the most part it is unreliable and inefficient. The better class of help drift into the cities, and it seems to be the tendency of all classes—farmers as well as laborers—but the help can and do get there first.

We believe the farmers' hope for prosperity lies more in improved methods of cultivation and a closer attention to the demands of the times rather than in any direct legislation; yet whatever will set the wheels of trade in motion and give employment to the workmen in our factories, at fair wages, we believe to be for our good.

The new School law does not meet the approval of farmers, the change from a system that was satisfactory being uncalled for.

ESSEX COUNTY.

OFFICERS FOR 1895.

President A. E. HEDDEN Verona.
Vice President WM. DEICKS, SR. Livingston.
Secretary J. H. M. COOK Caldwell.
Treasurer GEO. E. DE CAMP Roseland.

DIRECTORS.

CYRUS B. CRANE Caldwell.
I. S. CRANE Livingston.
C. H. FARLEY Livingston.
A. W. HARRISON Livingston.
DR. J. B. WARD Lyons Farms.

DELEGATES TO STATE BOARD.—F. C. Goble, Verona; Henry Farley, Livingston.

REPORT.

BY THE SECRETARY.

The Essex County Board is still endeavoring to hold up the star of hope to the despondent farmers of the county, urging more studious thought and intelligent effort in their vocation, but at times it does seem that our preaching is vain, for the fates are so often against us and seem determined that no great measure of success shall crown the efforts of our tillers of the soil.

The drouth of last summer has worked disaster to many of our crops, especially so with the potato. Despite the special efforts made by our most intelligent farmers to grow a good crop, they were nearly or entirely a failure, except where planted upon low, moist ground.

The first crop of hay was but slightly injured, but in no case have I heard of any second crop being gathered. This condition of things,

added to general decline in the market, has had a depressing effect upon many of our farmers.

But notwithstanding all our discouragements, we are determined during the winter to again marshal our forces for another conflict in the spring, with renewed faith in our God-given occupation, for we know that "seedtime and harvest will not cease," and that "he that tilleth his land shall be satisfied with bread."

Our Board has done more work the past year than ever before, and we have been encouraged to a greater effort by an increased attendance at our meetings and Institutes. Our roll of membership has been increased by the names of those who will make active workers in the Board.

Besides the regular meetings we have held three Institutes, with the assistance of the officers of our State Board, who have always responded to our call for help, bringing with them our professional friends from the Agricultural College and Experiment Station. Their presence is highly appreciated, and their addresses always spoken of with praise.

The efforts of our State Board to throw light and knowledge upon our pathway are being more highly appreciated, our meetings are better attended and always spoken of with enthusiasm. Although they have been somewhat frustrated by the (Fates?) weather, the few that they have succeeded in attending through the pouring rain have been richly rewarded. At Irvington Prof. E. B. Voorhees gave an excellent talk upon the production of milk, and Mr. Jones explained the working of his milk tester. The meeting throughout was very interesting. Our President, Mr. I. S. Crane, gave us a fine address. Mr. Goldsmith read a valuable paper upon the culture of small fruits, and Mr. Baker, of Bridgeton, gave us the results of his twenty years' experience in the business of "Market-Gardening." Mr. Wm. R. Ward closed the feast with an excellent resume of what our New Jersey horticulturists did at the Columbian Exposition in Chicago, and we all went home feeling well paid for our time, and for the effort we had made.

Our Institute at Verona, on March 21st, was well attended by our representative farmers and conducted with credit. Mr. A. E. Hedden, of Verona, gave us a very cordial address of welcome, followed by pleasant responses.

Secretary Franklin Dye favored us with an excellent address. He

interested us for an hour upon the importance of conforming to the laws of nature, and upon the necessity of improved methods of agriculture, according to scientific principles.

The evening session was devoted to a lecture by Prof. Smith, State Entomologist, upon "Insects Injurious to Vegetation." The address was illustrated by stereopticon views, and methods of extermination were explained.

I have received a greater number of replies than usual to my correspondence soliciting information in regard to the crops in the county, which are summarized as follows :

All agree that milk is the principal agricultural production of this county, and the farmer's son is often known as the milkman of the town or village. Selling milk direct to the consumer is found to be most profitable, notwithstanding the great amount of work it entails. Our farm productions are also mostly disposed of in this way, and "no middleman need apply" to the farmers of Essex county. The retail price of milk is from six to eight cents per quart. The wholesale price seldom more than three cents.

Market-gardening is the next most important branch of agriculture with us, and most of our gardeners report short crops and low prices about as follows, 100 being the average: Potatoes, 50; cabbage, 40; apples, 45; corn, 20; peaches, 60.

One of our farms is favorably located, and Mr. De Baun, the owner, seems to have experienced no inconvenience from the drouth. He reports potatoes 100, says he has 250 bushels to the acre, and sells for \$2 per barrel. His other crops are reported well up to the average, although he says the drouth has made a shortage in some of them.

He remarks that considering the times he thinks the drouth a blessing. Also that our greatest problem is how to procure good help in the house.

Mr. G. M. Canfield remarks that raising milk is more profitable than ordinary farming, and he thinks our State ought to provide for the inspection of all cattle.

Mr. Deicks states he thinks the legal rate of interest ought to be reduced to five per cent., because so many of our farms are mortgaged, and that the State appropriation for roads ought to be greatly increased. In his judgment farmers would do well to do more think-

ing and less labor; believes the new School law of no benefit to his township.

Mr. I. S. Crane remarks that the new School law is an improvement, and he thinks it ought to be published in pamphlet form.

I am favored with a short article on the dairy business by Mr. F. W. Meeker, one of our most enterprising milkmen, which I submit herewith as follows:

“The dairy business is undoubtedly the most important agricultural industry of Essex county, our farmers being largely engaged in the production of milk, which is sold to dealers or delivered to customers at retail in the cities and villages of the county, where it sells at from six to eight cents per quart. Native cows are generally kept, with a few Jerseys to give color to the milk.

“Brewers’ grains are the most profitable feed, and when fed with corn meal and clover hay, will produce an average of from seven to eight quarts of milk per cow, of excellent quality.

“Wheat bran and meal are considered next to grains as a dairy feed and will produce good results, but at a small increase in cost. Milk can be produced from these feeds at a cost of from three to five cents per quart, always supposing the cows to have thoroughly comfortable quarters and good care. Where other than clover hay is fed, roots should be provided about three times a week.

“In my own dairy, we have for several years been using hot water for scalding feed, and then feeding warm. We have also warmed their drinking-water slightly, which runs through the stable in front of the cows, and they drink all they want twice a day. I think this one of the most profitable investments on the farm, as I am satisfied it increases the flow of milk from 15 to 25 per cent.

“For heating water and washing cans and so forth, we use a small steam boiler, which is run at an expense for fuel of twenty-five cents per day.”

GLOUCESTER COUNTY.

OFFICERS FOR 1895.

<i>President</i>	WM. H. BORDEN.
<i>Vice President</i>	D. W. SITHEN.
<i>Treasurer</i>	D. S. ADAMS.
<i>Secretary</i>	D. BORTON.

EXECUTIVE COMMITTEE—Theodore Brown, Benjamin Heritage, B. R. Black, Amos Gardiner, John G. Whittall.

DELEGATE TO STATE BOARD (two years)—Albert Heritage.

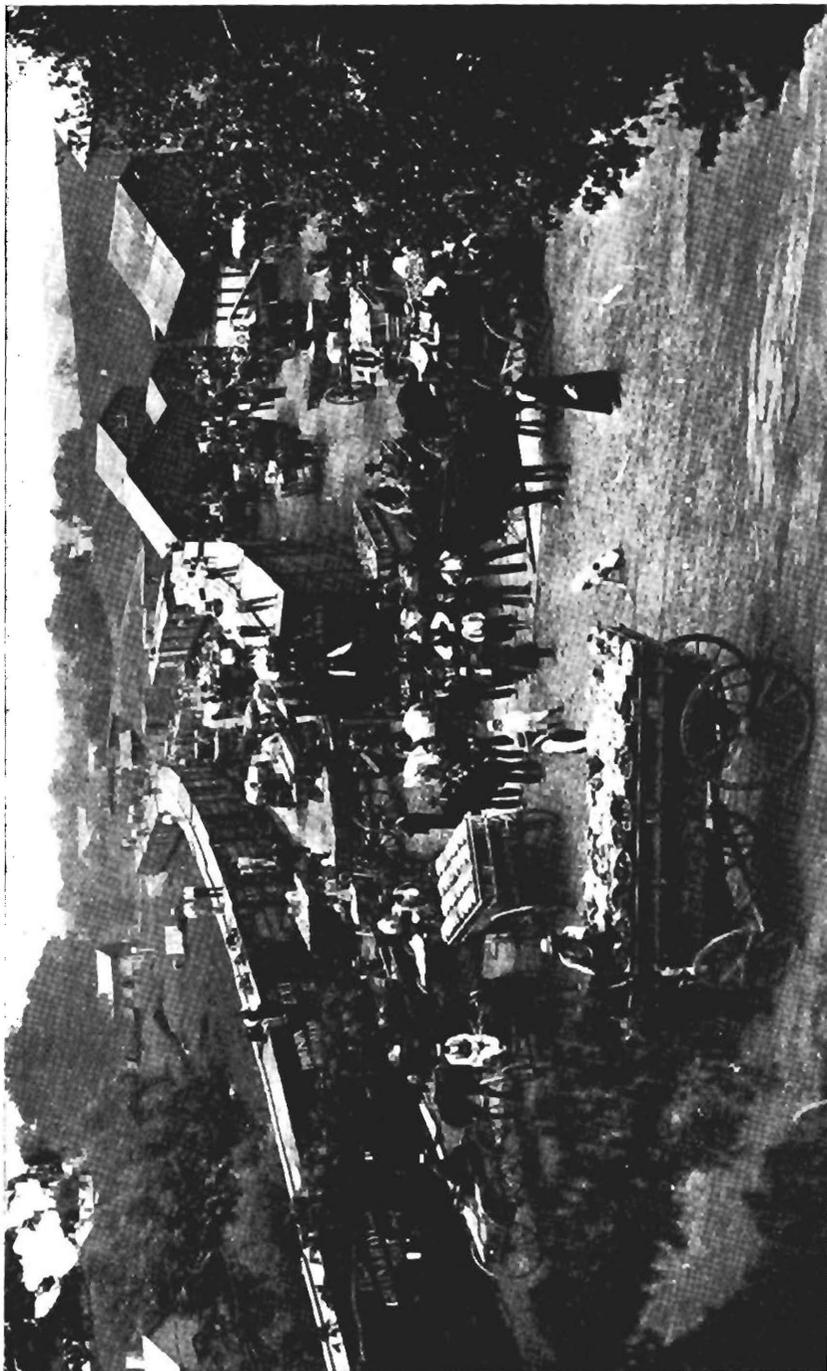
REPORT.

BY THE SECRETARY.

In summing the work and prospects of the past year have nothing new to report. The County Board has held four regular meetings and one Institute. The last two of County Board were unusually interesting. Subjects discussed pertained to having a more perfect road system, use of fertilizers, School law, cause of depression in agriculture and remedy, &c., all of which were ably participated in. The dairy business also was ably looked after. The Institute held at Swedesboro was a grand success, and the programme was fully carried out, and the papers and addresses were of an excellent character, showing practical thought and work, and we hope and believe many will be benefited by what they heard. The members exceeded any former occasion of the kind; notwithstanding the rain the last day, the hall was well filled. So much for the meeting. Now, as to the past year, it has been, financially, almost a failure to many, owing to the exceedingly wet spring, which was followed by a drouth. Early tomato, with a few exceptions, was poor and price low. Early potato crop light and price low, and this crop is more largely planted in this

section than any other except sweet potato, which is main crop in lower section of the county. This crop has been in most cases very large, and when matured early and marketed, result was large profit, but when put away, keeping badly and price low, result of year poor returns. Fruit is not a special crop, except with a few, and, taken as a whole, poor crop and low price. Corn crop light ; price low. Not many hogs raised or fattened in this section, and not very many in county. Poultry is raised in a small way, except by a few fanciers. Young spring chickens were raised and sold at good profit, but late stock low and returns no profit. The dairy business in producing milk for the market is one of the main products of a large number of farmers, and, where they have got returns, has been the best source to meet the demands of finance and have a good account in bank.

You Are Viewing an Archived Copy from the New Jersey State Library



View of Peach Exchange at Pittstown, Hunterdon County. (See page 895.)

HUNTERDON COUNTY.

OFFICERS FOR 1895.

<i>President</i>	V. R. MATHEWS.....	Ringoes.
<i>Vice President</i>	W. W. CONOVER.....	Flemington.
<i>Secretary</i>	WM. W. CASE.....	Baptisttown.
<i>Treasurer</i>	I. H. HOFFMAN.....	Baptisttown.

BOARD OF DIRECTORS.

- Hunterdon County Pomona Grange, G. W. Hockenbury.
- New Jersey Fruit Exchange, J. T. Cox.
- Hunterdon County Peach Exchange N. B. Boileau, M D.
- Hunterdon County Alliance, Rev. H. D. Opdyke.
- Sergeantsville Grange, Jos. Hagaman.
- Readington Grange, Jas. Lane.
- Ringoes Grange, E. E. Holcombe, Wm. Bellis, David Cole, B. E. Tine.

DELEGATES TO STATE BOARD.—Jos. Hagaman, Sergeantsville, one year; W. H. Opie, Readington, two years.

COMMITTEE ON PEACH STATISTICS AND REPORTER TO STATE BOARD OF AGRICULTURE.—Wm. W. Case.

Regular meetings of the County Board, third Saturday in April, August and November.

Other organizations :

NEW JERSEY PEACH EXCHANGE.

<i>President</i>	J. T. Cox.....	Readington.
<i>Secretary</i>	H. F. BODINE.....	Locktown.

HUNTERDON COUNTY PEACH EXCHANGE.

<i>President</i>	N. B. BOILEAU, M.D.....	Jutland.
<i>Secretary</i>	P. M. MECHLING.....	Pittstown.

HUNTERDON COUNTY POMONA GRANGE.

Master.....H. F. BODINE.....Locktown.
Secretary.....WILLIS RISLER.....Locktown.

SUBORDINATE GRANGES.

Kingwood, Sergeantsville, Ringoes, Locktown and Readington.
(For list of officers see Report of State Grange.)

HUNTERDON COUNTY FARMERS' ALLIANCE AND
INDUSTRIAL UNION.

President.....BENJ. BURD.....Pattensburg.
Secretary.....WATSON ANDERSON.....Stanton.

ANNUAL REPORT.

BY WM. W. CASE.

Three meetings of the County Board have been held the past year, the first one at Baptisttown, on April 11th. At this meeting President Mathews addressed the Board on the "Dairy Question."

The August meeting, by invitation of Ringoes Grange, was held in conjunction with their picnic in the grove of E. E. Holcombe, at Mount Airy.

A large crowd was in attendance, and were entertained by addresses by President Edward Burrough, of the State Board, and the Hon. Mortimer Whitehead, of Middlebush, N. J. Everybody seemed to enjoy the day very much.

The annual meeting was held at Flemington, on December 15th, and was well attended. Valuable addresses were made by Joseph Fitzga, of Somerville, on "Crimson Clover;" by James Cheesman, Southborough, Mass., President of the Eastern Buttermakers' and Cheesemakers' Association, on "The Dairy," and by Mr. C. E. Chapman, of Peruville, N. Y., on "Poultry for Profit." (For the two last named addresses see pages 247 and 227.)

All the addresses were excellent.

The past season has not been very encouraging to the agriculturist, owing, in many instances, to low yields, caused by excessive wet in early spring, which was followed by one of the worst midsummer drouths on record. Hailstorms in June did much damage to growing crops and fruit in some parts of the county ; peaches, pears, corn and clover suffering the worst.

Wheat and rye were fully up to the average in yield and quality, but owing to low prices, little if any profit was realized from the crops grown. Oats low in yield but of fair quality. Corn, in many fields, was almost a total failure, while in some others which seemed to be less affected by the drouth, the crop was good. The potato yield is the smallest in years, while many fields of buckwheat were not worth harvesting.

Some fields of excellent hay, while others were so poor as to hardly pay for cutting.

TOMATOES.

Tomato-growing seems to be coming into greater favor each year, and our pack greatly increasing. In 1892, the pack for the whole county was 115,000 cans. In 1893, 290,800. While the season just past (1894), foots up to 430,000.

Ringoos Canning Company, organized in 1893, packed 180,000 cans this year, against 106,000 cans last year, and this in face of the severe drouth, shows it to be in a flourishing condition.

The balance, 250,000 cans, were packed by Everitt & Scarborough, Lambertville, N. J. (formerly Butterfoss Canning Co.), who consumed 800 tons of fruit, paying \$6.50 per ton for the same, and also putting up 150 barrels of sweet pulp.

The canning industry should be more largely developed in our county. There are now but two tomato canneries in the county, and no peach cannery at all, excepting one just organizing at White House. In 1893, three-fourths of a million baskets of peaches were allowed to rot on the ground for want of a market, while the present season thousands of baskets were bought at our Exchanges and sent all the way to Baltimore, Md., to be canned. If it will pay to pay freight on them that distance, and then can them, it will cer-

tainly pay to can them here, where the freight would be nothing. There are at least ten towns in the county that contain enough inhabitants to furnish all the help required in a first-class cannery.

OTHER FRUITS.

Cherry crop light ; not more than three-fourths of a crop.

Blackberries and raspberries ditto, and prices rather low.

Strawberries about a half crop, but brought fair prices. Net about eight cents per quart.

Pears about one-half crop, and worth November 1st, \$2.50 per barrel.

Apples a good three-fourths crop, and worth November 1st, \$2.50 per barrel, for choice stock.

PEACHES.

In spite of the cry that the peach crop was almost an entire failure, shipping-time showed that our crop was little, if any, below the average, amounting in round numbers to the enormous total of a million and a half baskets (1,514,453). The ripening of the crop was fully ten days shorter than usual, caused principally by drouth, and the shipping-season was reduced to four weeks, making our weekly shipments much larger than during the enormous crop of 1893, when the season lasted fully six weeks.

The result was, the market, not looking for such receipts, was badly glutted several times during the season.

The net receipts of the whole crop for the county will average somewhere between 40 and 45 cents per basket ; probably about 43 cents is as near as can be obtained.

The largest shipping points in the county the past season were : Pittstown, 184,749 ; White House, 158,000 ; Flemington, 142,774, and Lebanon, 123,122.

The Exchanges did a flourishing business. The New Jersey Fruit Exchange sold at their salesrooms, at Flemington, 57,283 baskets at an average price of $48\frac{4}{10}$ cents per basket. The Hunterdon County Fruit Exchange, at Pittstown, disposed of 39,818 baskets at an average price of $51\frac{7}{10}$ cents per basket, while a branch of the above,

located at Jutland, disposed of 6,853 baskets at an average of 47½ cents per basket.

The photograph accompanying this report was taken at the largest shipping point in New Jersey, if not in the United States, and shows Pittstown at the height of the peach season, also showing sales-rooms of both the New Jersey Fruit Exchange and the Hunterdon County Peach Exchange, the latter of which was in operation when the view was taken. Two hundred and eighty-nine thousand half-bushel baskets were shipped from here in 1893, by freight, not counting those sent by express, and 184,749 in 1894 by freight. The rush begins about 1 P. M. and lasts sometimes far into the night, shipments some days reaching 30,000 baskets.

At a very fair estimate, peaches brought not less than \$600,000 in hard cash into the hands of the Hunterdon county growers the season just past.

An organization perfect enough among the growers to have enabled them to have given a true estimate of their probable output early in August would most certainly have resulted in enhanced prices and prevented gluts, as our county had more peaches by far than there was supposed to be in the whole State. An imperfect estimate made by myself in August and published, stating that our peach prospects would indicate a shipment of not less than 800,000 to 1,000,000 half-bushel baskets, was severely criticised and pronounced at least twice too large, when in reality it only showed 60 per cent. of our output. It does not take a very heavy set of fruit on 3,500,000 to 4,000,000 trees to produce a million and a half baskets of fruit. Varieties most popular: Mountain Rose, Early Waterloo, Omison, Red Neck, Reeves' Late, Cherries Choice, Wheaton, Stump, XX Yellow, Prince Rare Ripe, Smock and Morris County.

Observations on the "peach yellows" the season just past seem to tend to confirm the theory advanced by me in my last report that it is nothing more nor less than poisoning by "plum rot." I shall experiment enough the season coming to either establish the *fact* or prove the theory false. *Either "yellows" cause the "plum rot" or the "plum rot" causes "yellows,"* as in all my observations the two are invariably found together and the "plum rot" *first*. *Possibly the "yellows" may weaken the constitution of the tree enough to make it an easy prey for the "plum rot."*

BEE-KEEPING.

The season just past has not been a very encouraging one to the bee-keeper, the severe drouth curtailing early honey and preventing late, my own yield being less than seven hundred pounds.

Foul brood has made terrible ravages in the county in the last three years, and where its characteristics were unknown made terrible headway and completely destroyed a large number of apiaries.

In one apiary 95 out of 97 succumbed in three years to the disease. Another lost 30 out of 34 during the season of 1892, while one large and several small ones have been cleaned out by it the present season.

The disease was recognized by no one until it appeared in a few of my colonies in 1893. I looked on it with suspicion from the start and soon diagnosed it completely, and during the present season have eradicated it by a heroic course of treatment.

It bids fair to "clean up" a great many apiaries if measures are not immediately taken to stamp it out, and it has already entailed a loss of several thousand dollars to our bee-keepers.

We need a law such as is in force in many of our States at present, placing it in the hands of the proper authorities, with full power to destroy all infected colonies where the owners refuse to treat the disease, or otherwise bee-keeping in New Jersey will, in a great measure, be a thing of the past.

The following resolutions were passed at the December meeting of the County Board :

WHEREAS, The disease known as foul brood has appeared in many apiaries in our county the past three seasons; *and whereas*, it has already totally destroyed many apiaries in our county, causing losses of thousands of dollars to the owners, and bids fair, if left unchecked, to exterminate the honey-bee from our county, to the detriment of both the owners and the fruit crop; *and whereas*, many owners take no measures to cure the disease or prevent its spread :

Be it resolved, By the Hunterdon County Board of Agriculture, that we urge a stringent law for the eradication of the disease, as is the case with other contagious diseases of farm stock.

Be it further resolved, That we hereby request the State Board of Agriculture to investigate said disease and to take such measures for its eradication as may be deemed advisable.

DAIRYING.

Interest in dairying seems to be growing and paying an immediate profit, while furnishing the means of improving the land by making more and better manure.

I attempted to collect complete statistics of our dairy industry, but more than one-half the associations paid no attention to my inquiries.

Idell Creamery reports making 50,000 pounds of butter the past year.

Oak Summit Creamery received 1,066,445 pounds of milk, for which \$1 per hundredweight was paid. They sold 830 quarts of cream for \$129.94, and 42,714 pounds of butter for \$10,676.85, an average of 24.45 cents per pound.

Oak Grove Creamery started in business on July 23d, and to November 20th, received 99,100 pounds of milk, making 4,292 pounds of butter from the same, which sold at an average of $24\frac{1}{2}$ cents per pound.

Clinton—a bottling and shipping establishment reports receiving 610,004 quarts of milk, paying an average price of $2\frac{3}{8}$ cents per quart, a rather larger price than that reported by any of our butter creameries.

A movement is on foot to organize a creamery at Baptisttown, which, I presume, will be carried through.

The report of the Locktown Dairymen's Association, being a valuable reference and statistical table of the year's work and also in milk-testing, is appended in full:

REPORT OF THE WORKINGS OF THE LOCKTOWN DAIRYMEN'S ASSOCIATION, FOR
 THE YEAR ENDING OCTOBER 31st, 1894.

MONTH.	Number of pounds of milk received.	Number of pounds of butter sold.	Number of quarts of cream sold.	Butter sold for	Cream sold for	Skim milk sold for	Average butter-fat test of all milk received.	Highest average test of individual herd.	Lowest average test of individual herd.	Price per pound paid for butter fat.	Average price paid per 100 pounds of milk.
1893.											
November....	97,040	4,598	.....	\$1,317 54	.....	\$4 74	4.47	5.96	3.65	\$0 27	\$1 21-
December....	85,968	4,076	.....	1,207 95	.....	3 75	4.50	6.05	3.83	27	1 21+
1894.											
January.....	109,919	5,103	.....	1,909 13	.....	4 03	4.31	5.83	3.87	25	1 08-
February....	102,105	4,719	.....	1,290 50	.....	5 78	4.31	6.00	3.74	26	1 12+
March.....	109,763	4,917	.....	1,158 05	.....	3 93	4.08	5.13	3.48	23	94-
April.....	112,916	5,045	71	1,229 99	\$8 52	6 03	4.09	5.09	3.85	23	94+
May.....	154,899	7,092	.....	1,906 65	.....	7 12	4.19	5.48	3.61	17	71+
June.....	177,746	8,071	151	1,503 80	17 58	8 93	4.22	5.09	3.74	18	76-
July.....	157,886	6,590	1,100	1,851 06	132 00	9 84	4.23	5.22	3.56	19	80+
August.....	157,743	6,753	932	1,588 32	117 81	47 37	4.21	5.40	3.60	23	87+
September....	135,317	6,249	.....	1,558 32	.....	33 35	4.35	5.69	3.78	25	1 09-
October.....	135,069	6,177	.....	1,590 39	.....	37 84	4.43	5.87	3.78	25	1 11-
Total.....	1,536,371	69,393	2,254	\$16,411 70	\$275 91	\$282 71	.....	.....	.....	.....	.....
Average....	.....	.....	.....	.....	.....	.....	4.23	5.23	3.66	\$0 23%	\$0 99%

GEO. W. HOCKENBURY, Supt.

DOG LAW.

The new Dog law resulted in the registration of 8 dogs in my office (Clerk's) out of a total of 170. I know of none being killed as a result of the law. In fact the law itself seems to be as near a "dead dog" in this county as it is able to get. Yet, in my humble opinion, the law is a most excellent one, and one that should be rigidly enforced.

THE NEW SCHOOL LAW.

As regards the new School law, will only quote from a large number of correspondents. Only one correspondent speaks in favor of it.

One correspondent says: "We will try the new School law before we pass upon it." Others: "It is deprivation of local self-government." "Getting too far off; centralization; expensive." "Think the people ought to know the needs of their own districts best."

"In regard to the School law. Our school-house at Pittstown is in Alexandria township. Most of Pittstown lies in Franklin township, so that we have nothing to say in regard to teachers, or any-

thing else. It is not just and does not give satisfaction to the community."

There is little or no opposition to free books.

I will also state that the school-building in which I taught last year stands in one township (Alexandria), while not more than 20 per cent. of the pupils reside in that township, most of the pupils coming from *two* other townships, Franklin and Kingwood. Under the new law the school-house will be of no further use to Alexandria township in its present situation.

FOUL SEEDS.

It is imperative that something be done by our Legislature in regard to foul plants. Ox-eye daisy (*Leucanthemum vulgare*) and carrot (*Daucus carota*) have taken such complete possession of some fields that at a short distance they may readily be mistaken for buckwheat. Canada thistle (*Cirsium arvense*) is rapidly increasing, and will be beyond eradication if not taken in hand soon.

My attention was called to a plant last summer, by a gentleman who said it had made its appearance the season before, and was spreading with great rapidity. It proved to be the horse nettle (*Solanum Carolinense*), a vile plant, spreading by both root and seed. It promises to give much trouble if not taken in hand immediately. It is found, also, along the Belvidere Delaware railroad. At this writing I have found it in but the two localities mentioned.

FIVE YEARS' EXPERIENCE WITH CRIMSON CLOVER.

BY JOSEPH FITZGA.

In my early days of farming, when meeting my neighbors our conversation would generally be regarding the number of sheaves of grain we could bind in a day, or how many shocks of corn we were able to cut or husk. To-day the much more important question asked is, How many bushels of grain or potatoes can we grow per acre at the least cost, so as to leave a balance for our investment and labor?

The far West, with its virgin soil, rich in fertility, combined with the latest improved machinery, cheap railroad transportation and cheap land, has brought farming in our Eastern States to a standstill.

For the last ten years farming, at its best, has only left a small, if any, margin of profit to the grower, loaded down as he is with heavy obligations, and generally cultivating more land than he can sufficiently manure, which makes more expense for work and less yield per acre.

Western farmers have driven us out of the market for all kinds of meat, and farmers who formerly had six to ten head of steers and a flock of sheep for their spring payments, to-day you will find with a few scrubs of cows, kept solely as machines to make manure and a little butter.

Agents for commercial fertilizers swarm the country. Each has just the very brand you need for growing a crop. He makes 50 per cent. on his investment, and you buy, hoping to make the other 50 per cent. on your own investment. Have you done it?

The question arises, How are we to remedy all this?

First, by raising our most important and expensive fertilizer, nitrogen, which our Creator has made available for our use, by growing crimson clover; second, by learning to cultivate less acres, but cleaner and more thoroughly.

If you have twenty acres of corn stubble to plow this spring, put only ten acres in oats; the other ten prepare the same time, harrow finely and sow not less than sixteen, better eighteen pounds of crimson clover seed to the acre. If the ground is in a low state of fertility apply 150 pounds muriate of potash and 150 pounds of slag meal per acre, and harrow both ways with smoothing harrow, or if the ground is not of a bakey character, you may roll in place of harrowing. By July 12th, the clover will be in full bloom, ready to cut for hay; the weather will be as a rule, at that season of the year, such as to cure it into a first-class article. The stubble and roots left on the ground are worth four loads of the best horse manure, worth two dollars per load, per acre.

If it is desired to plant the ground to corn the next season, plow it up again and seed it with eighteen pounds of crimson clover seed per acre, by August 20th. No fertilizer will need to be applied. By April 20th, next year, you will have a growth of clover on the ground worth, in manurial value, fifteen loads of the best horse manure per acre, which will insure a full crop of corn. Should the growth be too rank, cut and let lie three or four days before plowing, or if plowed

standing, apply twenty bushels of lime per acre, to prevent souring the soil.

My practice is to sow crimson clover in standing corn the latter part of July. Cultivate both ways to mellow the ground thoroughly and sow sixteen pounds of seed to the acre. It will grow best if the corn has small stalks, as it can then get more sun.

If you want to get rid of all obnoxious weeds, I would advise planting to corn the second season, as it will then eradicate all the weeds in both layers of soil, upper and lower, leaving the ground in perfect condition for permanent grass. This is the rule I follow.

For potatoes I would recommend the August seeding, and if too heavy growth is made the next April, cut, let lie a few days, and then plow under; apply a dressing of muriate of potash, and you may be sure, other things being favorable, of a full crop of tubers.

In peach and pear orchards it will, if sowed in August and plowed down the next season, change the foliage from a light to a very dark green, and the fruit will be fairer and stick better to the tree, while the soil will be kept in that nice, mellow condition most essential to all vegetation.

For soiling purposes, crimson clover is the king of grasses. It being of very early growth, you will be able to begin cutting for green fodder between April 10th and 20th, a time usually when fodder is getting low, and one acre properly handled will furnish food two weeks for one dozen cows, increasing the milk fully 25 per cent., and stopping that practice, now almost universal in early spring, of turning the cattle on ground to be plowed for corn, in all kinds of weather, thus packing the soil when it should be kept loose as possible. The practice should have been abandoned long ago.

And, finally, let us cultivate cleaner, choke out weeds with crimson clover, and not make our farms hot-beds for their propagation. Cultivate no more acres than we can cultivate and fertilize thoroughly, and make ten acres good before we cultivate twenty, thus lessening the cost of production and increasing the yield per acre in tons of hay and bushels of grain for each acre under cultivation.

You Are Viewing an Archived Copy from the New Jersey State Library

MERCER COUNTY.

OFFICERS OF THE BOARD FOR 1895.

<i>President</i>	S. B. KETCHAM	Pennington.
<i>Vice President</i>	WALLACE LANNING	Trenton.
<i>Treasurer</i>	H. R. WITHINGTON	Titusville.
<i>Secretary</i>	FRANKLIN DYE	Trenton.

DIRECTORS.—D. C. McGalliard, I. J. Blackwell, Wm. S. Riggs, A. D. Anderson, Gilbert D. Rue, Wm. S. Schenck, A. L. Holcombe, Edw. Howe, L. L. Brewer, Wm. H. Hughes.

LEGISLATIVE COMMITTEE.—S. B. Ketcham, J. V. Green, A. D. Anderson.

DELEGATES TO STATE BOARD.—S. B. Ketcham, two years; Ralph Ege, one year.

SOCIETIES REPRESENTED.

Princeton Agricultural Association, organized 1840.
Hopewell Farmers' Club, organized 1868.
Mercer Grange, No. 77.
Pennington Grange, No. 64.
Hamilton Township Agricultural Association.
Hamilton Grange, No. 79.
Ewing Grange, No. 73.
Titusville Agricultural Association.

REPORT.

The Mercer County Board continues its activity in the interest of the agricultural, horticultural and stock interests of the county. Has held its regular meetings with fair representative attendance, but too many farmers ignore the advantages afforded by these co-operative meetings. An outline of proceedings is given further on in this report, with also some addresses in whole or in part. The county, both as to climate, soil and products, is largely a type of the State, for in this county every product is grown that is grown in any other

county, and the soils vary from the rich red soils of Stony Brook, stretching from Hopewell in the northwest, and extending through Princeton township, merging into the fine gravelly loam of West and East Windsor and Washington, while in parts of Washington and Hamilton the sandy loam soils are found. The farmers, too, are progressive, another type of the State. Much of the produce of the county is marketed within its borders, owing to the demands of the city of Trenton and the large non-productive population in the State Schools at Trenton; the school at Lawrenceville, the finest school of its kind in the country; the Pennington Methodist Seminary; the Peddie Institute, a flourishing Baptist school at Hightstown, and the old and honored institutions of Princeton. The population of these centers of learning runs up into the thousands during the school year, making a market for fresh products grown in the vicinity of each.

DAIRY.

Butter-making for market by farmers seems not to be increasing, nor is the price for farm-made butter as high as creamery-made butter at the stores and markets, the average price for the year having been 25 cents per pound for good. There is one creamery in the county, located at Hopewell. This uses the milk from twenty small dairies, comprising about 235 cows and 900 quarts of milk per day for the year. The milk market of Trenton consumes over 10,000 quarts per day, besides the cream and butter. The wholesale price of milk paid by retailers is $3\frac{1}{2}$ cents per quart. The retail price in towns and cities in summer is 6 cents, and in winter 8 cents; not quite so much at the creamery.

The most profitable breed of cows for the average farmer is considered to be, by some, the Guernsey; others prefer Jerseys and Holsteins, or the grades of these breeds. In actual practice, the best cow is the one that does the best for her owner.

HAY.

The hay product of the county is an important one. Besides that consumed at home by the stock of the farm, a large surplus has been grown and marketed, at paying prices, up to the past season, when the price went down in common with other products.

In connection with the low price of hay, and wheat especially, the question arises, Can they be turned into something else before leaving the farm that will sell for a larger profit? Every farmer must decide these matters for himself. Although changes cannot be made in a day—and they should not be at all without careful consideration—yet the possibility of manufacturing more of low-priced farm products into milk, butter, eggs and pork are worth considering, and in connection with increasing the fertility of the farm thereby, thus reducing the fertilizer bill also.

POULTRY.

A few farms are largely devoted to egg and poultry production for market, and this business needs to be studied by the practical farmer more than it has been. There is a good market for fresh eggs the year through, and those farmers who will so manage their fowls as to keep them laying the most of the year will realize a profit not hitherto considered possible from the hens. To keep large flocks healthy and in good laying condition, requires study and attention; but no business will prosper without these.

FRUITS.

There seems to be no attention given to the saving of surplus or inferior fruit by evaporation, or drying by evaporating devices. This is thought to be a mistake. Unless such fruit is consumed by stock with profit, there is a waste here that might be utilized to advantage. If ever, the time is now when we must look after the *small items*, which, if lost, deprive our work of a profit, but which, if saved—all saved—will turn the balance in our favor; and that is the difference between a paying and non-paying business, after all. Business men figure on a very small margin and farmers must not overlook these seemingly trifling items.

Among the discouragements to fruit-growing named, are insects and too much competition. But with *perfect fruit* there is not so much competition, and if the spraying machines are rightly used with the proper "insecticides," perfect fruit can be produced. Spraying is therefore another of the "items" that should be attended to.

THE CANNING INDUSTRY.

There are three canneries in the county. The Hopewell Valley Canning Company has put up 293,000 quart cans of tomatoes, for which the farmers have received \$5,200, and wage-earners, \$4,800; tomatoes per ton, \$6.38. The Titusville Fruit and Vegetable Canning Company have packed 237,000 cans of tomatoes; 4,400 cans of raspberries; 2,600 of pears in glass jars. Tomatoes per ton, \$6.50. Hightstown factory packed 214,000 cans. Paid farmers \$6.50 per ton. The season was short.

The degree of prosperity in agricultural work is thought by some to be about as in 1893, others, a majority, think it has been less prosperous. Causes contributing as given, are dry summer, short crops and low prices. This year, in some crops, notably potatoes, we have a short yield and low prices both occurring at the same time.

Price per acre of farms in average good condition of both land and buildings is from \$30 to \$70. It is thought by some that laws compelling the destruction of injurious insects and the regulation of freight rates by mileage would be of advantage. There are those, too, who believe that farmers can improve their condition by more thorough work, and by growing such crops as are in greater demand. That there is a good deal of careless farming is evident to the practical observer. It is also true that there are farmers who will not change from the old rotation of crops, though such crops have ceased to be profitable.

Is the new School law an improvement over the old district system? is answered by one, emphatically, "No!" Another says, "It don't work very smoothly; may do better when modified." It is considered too expensive. But those who are disposed to deal fairly with it suggest as one improvement that there should be one Trustee for each school.

At the annual meeting President S. B. Ketcham delivered the annual address, which was very comprehensive, suggestive and helpful. A brief synopsis only is presented.

ADDRESS OF PRESIDENT.

Through the mercies of an overruling Providence another period of our existence has become a matter of history, and once more, in annual session, custom imposes a duty on your presiding officer which another could have discharged with greater ability, interest and profit.

The past year, like all its predecessors, has been attended with various conditions. We have experienced joys and sorrows. Sometimes hope has enkindled large expectations which soon gave way to discouragement, and thus our lives, restless as the ocean waves, are moving onward, one day upon the crest of the wave and the next almost in the depths of despair.

After speaking of the crops and prices, Mr. Ketcham proceeded: The causes of farm depression have been discussed by this Board so thoroughly and the ground has been plowed and harrowed so often it would be vain repetition to refer to it again. The great thought for us is, How can we better our condition? We must study our location and market, finding what its needs are, which of these we can supply, and how to grow the greatest quantity at the least expense.

Our country is passing through one of the most severe trials ever experienced in times of peace. Burdened with plenty, its granaries, like those of the entire bread-producing world, are overflowing, and failing to pay the producer the cost of production. Thousands of fellow-beings in our large manufacturing centers have not the means of purchase, and are dependent on the open hand of charity to supply their needs. For more than a decade past the farmers have been lamenting their condition, not so much from a lack to obtain a comfortable livelihood as the dissatisfaction caused by seeing others engaged in different pursuits receiving a larger return for the capital and labor invested. It is undoubtedly a fact that our own business has been injured, especially the unprecedentedly low price of farm lands, by the common cry that "farming did not pay, and there is nothing in it."

We need only to take a glance at the manufacturing interests of this city, witnessing the thousands of idle capital invested in factories and mills, where recently the hum of industry was heard on every hand, and how different now! The motionless potter's wheel and silent loom tell not only of loss to the owners, but far greater to those dependent on daily toil for support of themselves and others.

Connected with this condition of affairs a marked change is noticeable among the laboring classes in our rural districts. Until recently, the high wages, fewer hours and attractions of city life led our best labor element cityward, but now those having fair wages and comfortable homes are better satisfied than heretofore.

Not only labor, but capital, is looking with much more favor on farm investment than formerly. A year or two ago it was almost impossible to secure a loan from a capitalist here upon a farm, however desirable, but now this is changing and money from the city is readily obtained on good land security.

Not only this, but if we compare values of city and country property, past and present, we find that while farm lands have been depreciating in money value, the low-water mark has apparently been reached, and the few that have changed owners, the prices generally were equal, if not better, than a year ago. During this period city property has advanced, but now the scale is sliding downward, and unless a material change occurs in the business world, it is reasonable to presume the time is not far distant when city property will depreciate in like proportion with the rural.

Surely one of us hope that our city cousins will be compelled to suffer these disastrous things. Our prosperity is largely dependent on theirs, and the favorable condition of the one class tends to the betterment of others.

Tell me, if you can, what enterprise a man can engage in with the same amount of capital, taking farms at present prices, and be sure of better returns under all circumstances? There are so many things in the cost of living that the average farmer does not compute; in the credit account, house rent. What would that be if living in the city? Every drop of milk, each egg, every single vegetable, the use of a horse and carriage for business or pleasure, an occasional day of recreation. These, with many items, we seldom consider, but which in every instance draw from the pocketbook of our city neighbor.

Again, the city of Trenton has almost 60,000 population, and how many have acquired a comfortable competency? True, some are very wealthy, and it is with these that, as farmers, we too often compare our condition. Yet occasionally they make serious mistakes, and at the close of life their circumstances are not enviable; while the farmers, as a class, are frugal, conservative, knowing how hard a dollar is to obtain, are careful in its expenditure or investment.

I surely do not wish to be understood from the foregoing that farming is a business of any large profit. This would be contrary to universal experience, but believing that a comparison with other trades might, if attended with careful, thoughtful reflection, lead to a greater satisfaction and contentment with our occupation.

Here the President discussed the burdens of increasing taxation and the numerous high salaries paid to public officials, and continuing, said :

As a Board, we trust our efforts for mutual benefit have been attended with good results. Our programmes have varied in topics, endeavoring to cover every branch of agriculture prominent in our county. Those persons have been invited to address us who have given special attention to subjects assigned, while the members of the Board have generally responded to the calls made on them.

To-day I am forcibly reminded of the flight of time. Ten years ago delegates from the different organizations in the county met in a storage-room of the State Capitol, and effected an organization that still lives ; while many who were then present have been gathered into the immortal harvest. Their venerable forms, friendly greetings and wise counsels are yet fresh in our memories. And thus the changing seasons in the world of nature and human life are constantly reminding us that others will soon take our places. Others will cultivate the fields we have so faithfully tilled, and perhaps reap where we have sown. Therefore, fellow-laborers, as we enter upon the duties new opening before us, let us, with renewed energy, strive to cultivate the mind with the field, add dignity to labor, bring honor to our calling, and may He who has promised seedtime and harvest reward our labors with abundant success.

The proceedings of the Board have included the consideration of tomato-growing for early market, and an address on this subject was made by a practical farmer of Cumberland county, and is as follows :

TOMATO-GROWING FOR EARLY MARKET.

BY WILLIAM BACON.

The tomato as a market crop is profitable only as it is forced ahead of its natural season. With this in view, early maturity is the point strived after, both in the variety and mode of raising them.

To accomplish this result it is necessary that the plant be as fully developed as possible under glass before the weather conditions will permit its being set in open field, and herein lies in a great measure the success or failure of the early tomato grower.

After the plant is placed in the field the rain and the sunshine fall alike on the good and the poor plant, and it is needless to say that the good plant always keeps in the lead. If through any cause we fail to have strong, healthy plants, the crop may not return money value commensurate with the time and expense of raising it.

To obtain the best results under glass requires patience, judgment and close attention to details, and I would lay stress on the minor points that are too often neglected. Whoever will succeed with this crop cannot afford to be neglectful of a single point in the early stages of growth, for a single mistake may cost him his whole crop.

The seed should be sown in a hot-bed from the tenth to the twentieth of February, but not later, just as the weather will permit. The later date is rather late. If the bed is warm the seed will germinate quickly and the ammonia escaping from the fermenting manure from underneath forces the plants to a rapid growth, when the outside is at this time generally cloudy and stormy, often quite cold, requiring the beds to be kept tightly closed and the glass well covered, that no draught of outside air may reach these tender plants. Under these conditions the growth cannot be healthy, and when at last the covering can be removed, the plants look sick enough. The sun shining through the glass into this close place raises the temperature to a very high degree and to modify this by letting in cold outside air without destroying the plants often baffles the most expert. Growing plants in hot-beds is perhaps the most difficult part of the whole operation.

Recognizing the difficulty of raising plants under these conditions, some years ago I built a small hot-house for the express purpose of raising tomato plants for my own use, and my success was very gratifying. This house is a very simple affair and has many times paid for itself. The sides are one foot high, and are made by spiking a two-inch plank to posts, and to this are fastened the sash slides. A path two feet deep is dug through the middle of the house to give head-room of four inches. Around the sides are strung two rows of four-inch water-pipe, which furnishes ample heat. The furnace is a brick affair with door and grate, and pipe coiled over the fire. This

house is forty feet long and twelve feet wide, and will start 25,000 plants.

House plants are in no way to be compared to hot-bed plants. The heat is always under control, doing away with the necessity of covering the glass day or night, producing a natural growth.

Plants thus raised are tough and woody. My neighbors were not slow to recognize the superiority of my plants, and within three years from the time of building this house I supplied nine-tenths of the early tomato growers of Cumberland county with their tomato plants, and during the past five years no one who has once ordered plants of me has failed to do so again next year. Plants thus grown have a tough, fibrous stem, rendering them much more likely to stand the change to a cold frame, where the roots are placed in cold, wet earth, and the only heat is from the sun.

The method of constructing cold frames is very simple. Select a level piece of ground and on this build a frame by driving stakes and nailing boards to them for the sides, making them sixteen inches high, and the bed fourteen feet wide. Down the center of the bed a row of posts is set, allowing them to stand two feet high, and on top of these a plank is spiked to form a ridge and path. This is called a double bed and gives better results than a single row of sash. Most growers place the cold frames on the ground where the tomatoes are to be grown and move them each year as other ground is selected to grow the crop.

In preparing the beds for the plants, place four inches of well-rotted manure in the bottom, and this manure should be free from sticks, cobs or other litter, and on this sow a little phosphate of some reliable brand, then cover with three inches of soil, generally using that from the sides of the frame when they are moved each year. Any soil is good enough that will not bake.

The plants are set in these beds about the first of April, in rows five inches apart both ways, or better five by six, which will give the plant more room to develop. In setting, care must be taken to firm the roots, for if this is carelessly done, poor results will surely follow, and it is always safe to pour a little water around each plant to settle the earth about the roots. There is always trouble to get help to do this work properly.

The glass should be covered with hay at night, for a few days after setting or until the plants become established, but as soon as the crown

shows a new growth no covering should be placed on the glass unless the weather is unusually cold. The cool air at night produces a healthy growth never seen in beds where too much protection is used.

As the weather becomes warmer, more and more ventilation must be given until the last few days before setting in the field, when the sash should be removed entirely day and night. By this time the plants will have attained a fair size and should show considerable bloom, and the roots will have extended through the soil and manure in a mass. To remove these plants to the field with the least injury, they are cut apart in blocks five inches square, leaving this amount of earth and manure clinging to each plant. This work should be done at least one week before removing to the field, and if the bed is thoroughly soaked with water at time of transplanting the plants will never wilt.

This is the usual method, but I have always noticed in transplanting to the field that the blocks of earth are often broken and the roots more or less mangled. To obviate this, some years ago I adopted the use of a box made for the purpose of manuring, in which the plants grew until ready for the field. After using these boxes for several years I pronounce them a success. Plants thus grown will produce a crop in money value almost double those grown in the usual way and much better than those grown in pots.

In my crop last year plants grown in boxes produced ripe tomatoes June 23d; those grown in pots, July 1st, and those grown in the usual way, July 6th. Better results were obtained the year before, when the weather conditions were more favorable.

In the field the plants are set in furrows four feet apart, and sufficiently deep to allow the top of the block to be slightly below the level of the surface. In each hill is scattered a handful of fertilizer, and on top of the hill is added 800 pounds to the acre. In the matter of cultivation the soil should always be kept thoroughly pulverized, using the ordinary cultivator and going through the tomatoes both ways twice a week, till the vines become too large to do so without injury.

The potato question by D. C. Lewis, Esq., of Cranbury, who spoke as follows :

ADDRESS OF MR. LEWIS.

Mr. President and Gentlemen—I have been invited by your Secretary to speak to the subject of growing potatoes, the preparation of the soil, kinds of seed, application of fertilizers, mode of cultivation, marketing, &c.

This is a large subject, as so much depends upon locality, character of soil, &c.

My residence in Middlesex county is close to the line of Mercer, and we believe is generally well adapted to the production of potatoes—very few oats are grown—and potatoes as a rule largely succeed the corn crop.

It is generally understood we must have a soil not too heavy in its texture nor too light, as in either case such soil would be an uncertain combination, and in many instances would be at least a partial failure.

Assuming we can have conditions of soil satisfactory, then the next important matter is its preparation.

We have learned by experience that it is of importance to plow our corn stubble in the fall, allowing the elements to work upon it in its loose condition. By this course we can prepare the soil sooner in the spring, it will be pulverized easier, and remain in a more friable condition during the crop season.

We deem the question of seed a very important one in producing a crop. We would not plant seed of our own producing, believing we could pay for Northern seed at a profit, even if we had to pay two prices for the same.

In speaking of fertilizers, I propose to refer to my own custom for some years, it having been quite successful, and I propose to continue it. Last year we applied 1,400 pounds per acre to our potatoes; 200 pounds muriate of potash, and 1,200 pounds of a high-grade special potato manure, applying 800 pounds with the Aspinwall planter at time of planting, and after the potatoes are up and have been cultivated, we drill in 600 pounds. The muriate is broadcasted at the time or soon after planting.

We plant with the Aspinwall planter, and aim to plant 17 inches apart in the row, the rows 3 feet 2 inches apart, and plant as nearly as possible 5 inches deep.

We plant more largely of the Rochester Rose variety, finishing with the Rural No. 2, or American Giant or White Star. The Rochester Rose is quite an early variety, and enables us to commence to dig early in August.

Our market has been Perth Amboy. We dig and sell to the grocers as fast as the potatoes will admit, providing the price warrants. This variety is a good yielder and of excellent quality, and is fit to dig as soon as large enough. We have made it the practice to sell quite all of our potatoes direct from the field, and believe all Jersey-men will be compelled to adopt that plan. My crop was all delivered last year before October 15th, and hence you will infer that we favor selling as soon as possible. Our average prices last year were about 72 cents per bushel. As to profits, Mr. President, I can't be so clear on that point. The past season was the most unfavorable one we have had for the last twelve years.

Our system of cultivation is somewhat varied, depending more or less upon the season. As soon as the potatoes are high enough we put in the cultivator, and keep it going continuously until we believe the potatoes are sufficiently advanced to gradually draw the soil to the hill. Our whole purpose is to keep the soil mellow and clear of weeds so far as is possible.

Mr. President, I read in the daily press there is at this time, or was a few days since, potatoes equivalent to the product of 3,000 acres afloat bound for New York, and paying a duty into the United States Treasury of 25 cents per bushel. These potatoes may be shipped at a less freight than our South Jersey potatoes can be placed in New York. Now, my friends, if potatoes can be shipped at a profit across the Atlantic ocean and pay a duty of 25 cents a bushel, what may our competition be when the duty is reduced to 15 cents per bushel, as now proposed?

The potato crop of the world exceeds either wheat or rye, but very little is said about it. It averages about 2,900,000,000 bushels, of which Germany produces a third, and the United States from 150,000,000 to 230,000,000 bushels. Russia produces about 500,000,000 bushels, Austria and the United Kingdom about 300,000,000 bushels each, but neither exports any of consequence. Germany exports less than 5,000,000 bushels annually. It would seem the United States, with her large area of territory, should be able to supply her own people

with all the potatoes they need, without bringing them in from Europe, Nova Scotia or Canada.

Hay-making was discussed by the Board, opened by Mr. Hale, who stated the cost of cutting now, as compared with old method, was no cheaper now than then, if prices were considered. But from this point the rake, the loader, &c., are great improvements over former years. So also with unloading by horse-power to a high elevation is a great improvement. But where the hay can be pitched down from the wagon, pitching by hand is quite as expeditious. Hay should be cut shortly before it comes out in bloom. Clover is the most nutritious hay for the farmer's use. Timothy for the market hay. Crimson clover was favorably considered for pasture and hay. An acre will store 200 pounds of nitrogen, which makes it very valuable to plow under—worth \$30 per acre. Thinks we ought to make more use of orchard grass; it is nutritious.

Mr. Jones said they had sown 4 acres of crimson clover, 15 pounds seed to the acre, and have a good stand. Began cutting the 12th of May, fed to cattle and the milk improved in quality and quantity. Have not tried it for hay. Plowed under one acre and the soil was in much better condition than adjoining ground.

Mr. Fowler thinks it costs him more to-day to make and store his hay than it did his grandfather. We should use the tedder very often. The best hay combination is clover and timothy. Has a fine piece of grass seeded early on potato ground. Alsike clover was favorably spoken of and considered a good mixture with red clover.

Mr. Holcombe—Timothy and clover are their standard grasses. Thinks improved hay machinery is a great improvement and need, for laborers are scarce. As to comparative expense of the old and new methods has not studied it up. Sows three to five quarts of timothy in the fall, and the same quantity of clover seed during the old of the moon in February. If too forward in the fall, pasture a little; this will extend the crown. Too much fall clover growth will smother the timothy out. Cut clover when one-third of the heads are brown. Cut timothy just after the bloom falls; it is heavier then than at any other time. Mr. Hendrickson would, for large mows, put in the first eight or ten loads quite dry; this will obviate the change of color and possible damage spoken of by Mr. Fowler.

At the December meeting Prof. Voorhees gave a most valuable address on the subject of manures.

MANURE—HOW MUCH AND WHAT KIND TO USE.*

The rational use of manures requires, first, that there shall be an exact knowledge of what a manure is. In too many cases comparison of manures leads to erroneous conclusions, because things are compared which are not comparable; for instance, a nitrogenous manure is compared with a phosphate manure, and one or the other is regarded as of no value, because no increase in crop is secured. We should remember that the essential constituents of a manure are nitrogen, phosphoric acid and potash, and that they should be compared with each other, and not one with the other.

In the second place, the method of cropping must guide as to how much and what kind to apply. Certain crops, like the grasses, derive the essential manurial elements entirely from the soil, and are exhaustive, while others, like the clovers (legumes), derive their nitrogen in large part from the air, and by their growth really improve the soil; the nitrogen of the roots and the mineral elements drawn from lower layers and deposited in the surface, increase fertility by improving both the chemical and physical character of the soil, and also insuring a better effect from applied plant-food.

It does not pay to apply high-priced plant-food to soils so wet that air cannot circulate, or so hard that the roots cannot penetrate; first see to it that mechanical condition is good, then apply the fertilizer. The best results are secured only when the conditions of growth are perfect; frequently a ditch or subsoil plow is worth more than a ton of plant-food per acre.

The amount to apply under good conditions should be greater than is required to secure the desired increase in crop, since conditions are never absolutely perfect throughout the entire growing-season; when they are unfavorable the plant is retarded in its growth, and can only recover the loss by having an abundance to feed upon when favorable conditions again prevail.

The kind to use is governed by the numerous characteristics of the growth of crops, and the object of growth—the method of growth, whether quick or slow; for instance, the potato requires more readily-available plant-food than wheat, since its period of growth is confined to a comparatively short time, while the wheat requires nearly the whole growing-season to reach maturity; the root system, whether

* A synopsis only is here given.

shallow or deep, whether fibrous or bulbous ; the capacity for acquiring food, and the season of most rapid development, must also be taken into consideration, in order to determine the most economical method of manuring.

It must be remembered, too, that while all the elements of plant-food are required, certain groups of plants are influenced by one more than another, and therefore that when soils are in good condition the application of the dominating or controlling element is of the greatest service. The cereals, beets, tomatoes, lettuce, onions, early corn, are specially benefited by nitrogen, since that element to a greater extent than the others induces leaf growth, while beans, peas, potatoes, late tomatoes, fruit trees, clover, &c., are particularly benefited by potash, which controls the formation of starch in the tuber, and promotes stem and wood growth. On the other hand, the phosphates are specially useful for turnips, buckwheat, cabbage, corn, &c.

At this meeting also two short papers, prepared by Rodolfus Bingham, Esq., of Camden, were read as follows :

FARMING UNDER GLASS.

As we profess to be a student in domestic and political economy, we cannot comfortably see sunshine wasted on opaque roofs. Nor do we like to see the heat generated in our dwellings for cooking food or warming rooms pass rapidly up through the stories and out only to warm the passing clouds. So, when reconstructing the back-building of our farm-house, we made of the third story an attic garden with a glass roof. The plant-room is 20 by 28 feet, and occupied by plant-beds, except a water-tank supplied by a windmill. We grow lettuce, radishes and a few flowers. After pulling the lettuce and radishes, we planted cabbage and tomato seed for plants for the farm, and later grew sweet potato plants. Last summer we made a water-lily pool of one of the plant-beds, about 80 square feet, six inches of earth and four of water, and planted it with *Nimfa zanzibarensis azura*, *purpura* and *rosa*, or, in English, sky-blue, purple and red, tender African water-lilies. They began blooming in June, and are still coming on. There were flowers over seven inches in diameter and leaves over sixteen inches. The sky-blue flowers, with bright-yellow stamens, are a good floral representation of a miniature sun in the

sky, and altogether a beautiful sight. If we could command language to give a fair idea of the culture, pleasure and profit to be derived from an attic garden, we would soon see the glittering glass on the dwellings of our State.

The glass is double-thick, on steel bars, and July 5th, 1894, we had a terrific hailstorm, which cut the crops and tree-leaves badly, but did no injury to the glass roof.

OUTDOOR HOUSES.

After studying the plant-house subject for several years, we, theoretically, concluded that about fifty per cent. of the heat generated in houses, as ordinarily constructed, was lost; and we built one so that the glass is only eight inches from the bed on the outside, and three and one-half feet on the in, or center sides, and carry the hot-water pipes in air flues under the surface of the beds. The boiler is set so low that the cool water returns to it. And the amount of fuel consumed per 1,000 feet of surface shows, when compared with that of houses with the heat-pipes above the surface and with higher roofs, that our conclusion that fifty per cent. of heat was wasted in houses of ordinary construction, was about right. From our experience of several years with this plan, and observation of the ordinary system, we find our plants are more healthy and vigorous than under the other plan. As is advised for human health, we keep the feet warm and head cool. We grow goldfish in our lily pools to keep water insects from injuring the plants and for profit.

WATCH YOUR CEDARS AND PROTECT YOUR APPLES.

The orange-colored fungoid which appears on cedar limbs in spring or early summer, and is called cedar apples by some, gives to the winds spores which are carried to apple trees, attack both leaves and fruit, and render the fruit unsalable. Dr. Halsted, our State Botanist, was once called to see a fine orchard, the fruit of which had been so rusted for a year or two as to render it worthless for market purposes, and when he arrived near the orchard he discovered the cause of the trouble on a hillside of cedars which were orange-colored with the fungoid. The cedars were burned and the owner of the orchard took the prize for fine apples afterward. The fungoid winters as guest to the cedar post, and does not live over on apple

trees. As apples are a most healthful and desirable fruit, and as cedars afford cool shade in summer, and temper the winter winds and storms to the shivering sheep, and beautify our highways, we advise watching them and burning the fungoid before it is ready to give off its spores. It has been estimated that a single "cedar apple" had enough spores to spoil an orchard. They appear in moist, warm weather, are quite conspicuous and easily gathered. They are not very plentiful in our section. We noticed some last summer and at once notified our neighbors, who gathered and burned them.

THE PEAR FIRE-BLIGHT.

When we came on our place, eight years ago, the pear trees were badly blighted, and we were advised to cut them out, but we cut off all diseased limbs, and although there was but little left of some of the trees, all recovered but one, and are now healthy and bearing well, except the past season, which was a poor pear year, but no blight appeared on the trees.

As heretofore, the report of the Inter-State Fair Association is included in this county report, chiefly because it is the successor and outgrowth of the Mercer County Agricultural Fair Association, organized by the Mercer County Board of Agriculture.

INTER-STATE FAIR ASSOCIATION.

Report of Board of Directors.

TRENTON, N. J., February 23d, 1895.

To the Stockholders of the Inter-State Fair Association :

Your Board of Directors respectfully submit for your consideration the following review of the business of the year :

There was a marked improvement in the care and general style of the installation of the exhibits, and the Fair of 1894 goes upon record as the most successful of the series given by our Association, so far as quantity, quality and variety of display are concerned, although we are not allowed the added pleasure of reporting the usual financial success.

To reduce expenses to the very lowest point possible, without seriously impairing the quality of the exhibition or the efficiency of its administration, has been the studied effort of your Board ; as a result of this action, the following items of saving appear as compared with the season of 1893 :

Premiums.....	\$2,586 22
Amusements.....	1,353 75
Police	63 00
Attendants and guards.....	82 89
Clerks and office expenses.....	114 74
Engraving and printing.....	1,211 82
Other advertising.....	395 91
Postage.....	238 01
Hay, straw and feed.....	227 61
Directors' room.....	118 18
Telegraph and telephone.....	46
Express.....	55 21
Maintennace and repairs.....	507 31
	\$6,955 11

Owing to some slight changes in the details of administration, and the fact that we had a large amount of insurance expiring, the increased items of expenses amounted to.... 1,931 74

Deducting this from the above, we have a net saving of..... \$5,023 37
in expenses, as compared with 1893.

The falling off in receipts as compared with 1893, consists of the following items :

Admission tickets	\$5,069 83
Grand stand tickets	1,460 50
Booths and dining tents.....	499 08
Space in buildings	116 50
Speed entries.....	231 82
Privileges.....	2,357 23
	\$9,734 96

As appears above, the receipts from admission tickets were reduced \$5,069 83
Grand stand tickets 1,460 50

Making a total of \$6,539 33
for these two items alone, which in themselves would have been sufficient to have paid a dividend on the common stock.

The unfortunate weather conditions prevailing, which culminated on Thursday in a particularly unpleasant day, and were followed by the same general conditions on Friday, are the direct cause of this reduction in revenue.

The total receipts for the week were.....	\$51,259 93
The expenses.....	47,935 99
Leaving a net profit of.....	\$3,323 94
From which was paid the dividend on the preferred stock...	1,400 00
And the balance of.....	\$1,923 94

Was carried into the general account. Adding this to the cash on hand at the beginning of the season, we have a fund of \$2,978.32 with which to inaugurate the campaign of 1895.

While no money has been spent in the year last past in permanent improvements, nor the purchase of furniture or equipments, the physical condition of the plant has been kept up to its usual high standard, and the Association is, at this time, absolutely without debt of any kind.

Embodying the business of the year into a general statement, we have the following

BALANCE SHEET.

LIABILITIES.

Capital stock (common).....	\$115,000 00
Capital stock (preferred).....	20,000 00
Surplus (undivided profits).....	35,950 97
Total.....	\$170,950 97

ASSETS.

Real estate.....	\$19,771 61
Buildings and improvements.....	141,854 98
Furniture and fixtures.....	6,346 06
Cash on hand.....	2,978 32
Total.....	\$170,950 97

By order of the Board.

JNO. GUILD MUIRHEID,

Secretary.

You Are Viewing an Archived Copy from the New Jersey State Library

MIDDLESEX COUNTY.

OFFICERS FOR 1895.

President.....SAMUEL BLISH.....New Brunswick.
Vice President.....I. D. BARCLAYCranbury.
SecretaryE. A. JONES.....New Brunswick.
TreasurerJ. B. FIELD.....Bound Brook.

DIRECTORS.

D. C. LEWIS, Cranbury ; term expires January 1st, 1896.
DANIEL HIBERT, Milltown ; term expires January 1st, 1896.
GEORGE W. MOUNT, Kingston ; term expires January 1st, 1897.
JERU PIERSON, Jamesburg ; term expires January 1st, 1897.
WM. M. DRAKE, New Brunswick ; term expires January 1st, 1898.
JOHN B. FIELD, Bound Brook ; term expires January 1st, 1898.

DIRECTORS IN STATE BOARD.

D. C. LEWIS, Cranbury ; term expires January 1st, 1896.
SAMUEL BLISH, New Brunswick ; term expires January 1st, 1898.

COUNTY AND CROP REPORTS.

BY ZENAS HENDERSON, SECRETARY.

Middlesex County Board of Agriculture has held three meetings since our last report.

First meeting held January 6th, 1894. Subject for discussion, "How to Protect Fruit-Bearing Trees from High Winds."

President Woodbridge Strong opened the discussion by giving his practice with fruit trees, which is to aim to keep the trees pruned so as to keep the fruit-bearing branches close to the main stock and as close to the ground as possible, making a more stocky, compact tree, on which the wind could not have that switching effect as on trees whose branches were allowed to grow to their natural length. A

lively discussion followed, participated in by many of the members, all agreeing that the theory and practice was a good one.

At the afternoon session, electric railroads to connect farms, villages and towns with our large cities was taken up for general discussion, entered into by various members of the Board, after which a vote was taken, which resulted in favor of said roads.

Meeting February 10th. At the morning session, after the regular routine business, a synopsis of the State Board meeting was given by Z. Henderson and D. C. Lewis, Director to said Board.

At the afternoon session, "The Bright Side of Farming" was presented by Z. Henderson, showing some of the comforts, privileges and advantages of farm life compared with city life—the good things of the farm, fresh, sweet and rosy, which the city is deprived of. Also the financial side of farming by actual figures of sales and expenses of his own farm from the year 1892, giving the farm credit for the produce consumed in family, house-rent, &c., and charging to the farm expense interest on purchase-money, hired help, money expended in fertilizers, repairs, wear and tear on machinery and tools, and found a snug little balance left in favor of the farm. After a discussion by many of the members present, all agreed that farming was not so bad after all.

Meeting March 10th. At the morning session the question of clover-seeding was introduced by Z. Henderson, who preferred seeding in February, when the weather would permit, as the seed was carried farther down into the ground by after-freezing and thawing, there to remain until all danger from frost was over, to germinate and come forth receiving the early spring rains, thus giving it a good root so as to stand the drouth of summer. Was satisfied, by observation, that a great deal of seed, sown in fine weather in the latter part of March and first of April, germinates on the surface of the soil and was very often killed by freezing. Would prefer the first of May to last of March or first of April, and then harrow the seed in well with slant-tooth harrow. Quantity of seed five to six quarts per acre.

P. A. Runyon thought the last of February to April first a good time for seeding, and five quarts per acre, with two quarts of timothy, sufficient seed.

E. A. Jones gave his experience in sowing oats and peas together for feed, equal quantities of seed, from which he had received good results.

Subject for afternoon session: Is producing milk at wholesale prices more profitable to the farmer than selling hay and grain? After being discussed freely it was agreed that milk was more profitable, as it would return more money than the hay and grain. Also the manure made was of great value in keeping up the fertility of the soil.

Middlesex county, unlike many counties in the State, has a diversified condition of soil; the northeastern section has a hard, red-shale soil, adapted only to the raising of hay and grain, and dairying purposes. From this section New Brunswick, Metuchen and Plainfield are supplied with milk, also with a great number of veal calves, as many of our farmers find it more profitable to fatten calves on their cows than to make butter for market. The dairy business is certainly increasing in this section of our county, and although it suffers more from drouth than many others, the dairymen are managing to have soiling crops to fall back on when the spring pasture gives out, such as rye, sown corn, &c.

The southeastern section has a surface soil of clay loam, under which there is a great quantity of valuable clay, which is manufactured into brick, drain tile, fancy terra-cotta, &c. What soil is cultivated is for growing vegetables and other suitable products for supplying the laborers in the factories, also to supply villages along the railroads.

The southern section is a sandy loam, used principally for market-gardening. Many farmers raise large quantities of tomatoes, strawberries, egg-plants, cucumbers, &c., which are shipped via Matawan to New York City. Very many are sold at the canning factories at Matawan.

In the interior of the county, near New Brunswick, fruits, vegetables, &c., are raised for New Brunswick market.

The northern portion of the county has a clay-loam soil, adapted to a high state of cultivation, from which are raised large crops of hay, wheat, corn and potatoes, apples and pears.

There are a few poultry farms in the county; two of which, one at Jamesburg and one near Milltown, are devoted, I think, to raising fancy birds; with what success I am unable to say.

Our farmers, generally, are giving more care and attention to the poultry department than in former years, and find it pays them well. I might mention one farmer near me who puts his land out on shares.

The last year he built a poultry-house and yard, and he makes a good living from his poultry. He says \$40 invested in poultry will give much better returns than the same amount in a cow from which to sell milk at wholesale.

I want to make special mention of the crops raised by Mr. George Smith, of South River, who makes a specialty of strawberries, which yielded this year 5,740 quarts per acre; average price received, 7 cents per quart.

Average yield of corn per acre, 45 bushels; wheat, 33 bushels; potatoes, 175 bushels; cabbage, marketable heads, 4,500, price per head, 3 cents. Average yield of timothy hay per acre, 3½ tons; mixed hay, 3½ tons.

This is a good showing for a poor, dry season, and shows what our farms can be made to do by proper feeding and cultivation. Mr. Smith uses great quantities of New York stable manure, as well as commercial fertilizers, and cultivates thoroughly.

Asparagus is being raised by some of our farmers, yielding a large profit per acre. I cannot give the exact figures of their sales, as I have had no report from them.

Since writing the above, I have learned from Mr. George Smith, of South River, that it was on his farm that those fine Ganges strawberries grew, which took the premium at the World's Columbian Exposition at Chicago in 1893.

You Are Viewing an Archived Copy from the New Jersey State Library



Fig. 1. Prest. Denise.
Kieffer Pear Orchard of Hon. D. D. Denise, Prest. State Board of Agriculture.

MONMOUTH COUNTY.

OFFICERS FOR 1895.

<i>President</i>	C. D. B. FORMAN	Freehold
<i>Vice President</i>	HAL ALLAIRE	Allaire.
<i>Secretary</i>	D. AUG. VANDERVEER	Freehold.
<i>Treasurer</i>	JOHN B. CONOVER	Freehold.

BOARD OF DIRECTORS.

HON. D. D. DENISE	Freehold.
JAMES H. BAIRD	Marlboro.
H. E. HULSHART	Lower Squankum.
WM. L. BROWN	Manasquan.
JOHNSON TAYLOR	Ocean Grove.
S. F. FOWLER	Allentown.
G. B. CONOVER	Englishtown.
J. S. FIELD	Red Bank.
L. F. S. SCHANCK	Marlboro.
J. J. BEERS	Keyport.
JOHN STATESIR	Colt's Neck.
DANIEL JONES	Freehold.

EXECUTIVE COMMITTEE.

JOHN H. DENISE	Freehold.
HON. DAVID BAIRD	Manalapan.
WM. H. REID	Tennent.

DELEGATES TO STATE BOARD.

WM. H. REID (one year)	Tennent.
HAL ALLAIRE (two years)	Allaire.

LEGISLATIVE COMMITTEE.

H. V. M. DENNIS	Freehold.
HAL ALLAIRE	Allaire.
JOHN H. DENISE	Freehold.

Other organizations in the county :

FRUIT-GROWERS' ASSOCIATION.

<i>President</i>	CORNELIUS ACKERSON	Keyport.
<i>Secretary</i>	W. S. CONKLIN	Middletown.

Meetings held weekly from November to April. For Granges see State list.

ANNUAL REPORT.

BY D. AUGUSTUS VANDERVEER.

In looking back to the time of our last annual report we find that the year began with fine weather prevailing throughout December and January, the first snowstorm occurring the last of January, with very little snow during the rest of the winter. Winter grain was sown somewhat later than usual in the fall of 1893, but owing to the mildness of the winter it grew well and proved to be a full crop in 1894, making the yield of wheat, rye and oats an average throughout the county of 100 per cent. Oats are not much grown in the county except in a small portion where they do not grow potatoes. The spring at planting-time was backward, and much rainy weather delayed all operations in that line, making it difficult in many sections to secure a good stand of corn and potatoes. A very severe drouth prevailing during the growing-season threatened to destroy all growing crops, but by proper cultivation some returned a full yield. Corn yielded an average of 100 per cent., and an average yield in the county of 56 bushels per acre. Potatoes suffered more, and only an average yield of 58 per cent. in the county, while some favored localities report some good yields. Potatoes are the money crop of Monmouth county farmers, there having been grown in Freehold township the past season 75,000 barrels, and in the county 200,000 barrels. They sold at digging-time for \$1.50 per barrel net in Freehold. The price now is about \$1 net per barrel—a loss of 50 cents per barrel—all owing to unwise legislation at Washington, D. C. Asparagus is extensively grown in many sections, and is a profitable crop. Stock and the dairy interest remain about as last year. Our farmers are in favor of good gravel roads, but are opposed to stone roads as too expensive for this locality.

CANNING INDUSTRY.

The canning interest in this county comprises six large establishments, giving employment to hundreds of hands and paying thousands of dollars to growers of asparagus, peas and tomatoes. The fruit interest is of growing importance. Growers of small fruits have

MONMOUTH COUNTY.

433

reaped a good harvest the past year. Yields have been good and prices fair—not much change in acreage from former years except in grapes. Many vineyards have been taken out as unprofitable on account of low prices. Apples and peaches suffered from the drouth and were a short crop. Pears nearly a full yield. The acreage of apples is growing less, as few new orchards are being set out, and the old trees are gradually dying off. But the acreage of pears has been increasing rapidly for several years past. Of the varieties, the Kieffer leads, followed by Leconte and a few Bartletts. Further details will be found concerning the several crops in the report of the Directors of this Board.

MEETINGS OF COUNTY BOARD.

The first meeting was held January 20th, 1894. The attendance was large. Mr. C. E. Chapman, of Peruville, N. Y., delivered an address on "Potato-Growing." He stated that the gross receipts for the average crops in New York State the previous year were, for corn, \$18.81; wheat, \$12.46; rye, \$6.59; oats, \$8.70; hay, \$12.37; potatoes, \$40.92 per acre. Their method of planting was in rows three feet apart and trenches six inches deep, then cross-dragged and filled in two inches, leaving a furrow four inches deep for the seed, which gave them the best yield. They cut their potatoes three or four weeks before the time of planting and cover with plaster, causing them to heal and keep in good condition. Mr. C. D. B. Forman gave a very full and interesting report of the doings of the State Horticultural Society, at its annual meeting, to which he was a delegate.

The second meeting, held March 24th, was devoted to the address of L. F. S. Schanck, of Marlboro, N. J. Topic, "The Relation of the Finances to the Agricultural Interests of this Country." (See address in body of report following Prof. Chamberlain's.)

The third meeting held August 18th. Topics discussed, "Experience with Crimson Clover" and "Seeding to Grass without Grain," are here inserted as follows:

CRIMSON CLOVER.

The crimson clover discussion was then taken up, it being opened by John H. Denise giving his experience with that form of clover. Mr. Denise began by saying that it was like carrying coals to New-

castle to try to tell those present about the subject; he hardly knew where to begin with such a momentous question. With regard to seeding-time he stated that he had seeded it from July 15th to September 28th; most writers thought that September 15th, was about the latest it was safe to seed it. About a bushel to four acres, or eight quarts to an acre, he thought was about the right quantity to sow. When he first began to sow it, three or four years ago, he did it without harrowing it, but now he harrowed it in, which he thought was better. That harrowed in this year was looking well. His experience in sowing it in corn was not very flattering, as in the three seasons before this one he had had but one good yield, and that was the first year. Last year he had a piece of land in peas. His intention was to turn it up and sow crimson clover, but it was so dry that it was but about half turned. He had a comparatively good catch, and the result was that now the potato vines were larger. Mr. Denise had dug so few potatoes that he could not yet tell whether they were any better or not. He attributed this to the fact that the growth requires more nitrogen, and had it in the clover. Nitrogen is a vine-grower and not so much a tuber-grower. If the growth of the potato were not better, where was the benefit of sowing the crimson clover? A good growth of crimson clover supplies 212 pounds of nitrogen to the acre, and it was a question whether this was not enough, and whether it would be necessary to put on a nitrogenous manure. If not, this additional cost would be saved, and if we are farming for profit it was important to reduce the expense and gain in yield. In a recent bulletin Professor Voorhees, of New Brunswick, held that crimson clover was worth as much as New York horse manure. The latter would cost \$35 per acre, and eight quarts of crimson clover would cost on the outside \$1.50. Mr. Denise stated that on a poor soil, where there was a little ammonia or nitrogen for a plant, the plant would draw on the atmosphere. In poor soils leguminous plants supply plant-food to the soil, therefore it would pay better to put crimson clover on a light soil than on a heavy or fertile one. Professor Voorhees claims that good crimson clover, when turned under, is worth as much as ten tons of New York horse manure per acre. Previously in his remarks Mr. Denise made this comparison and gave figures showing that the clover was much cheaper than the manure.

Mr. Denise said that he sowed a piece in crimson clover and plowed it in for corn very late, when it was fourteen or fifteen inches high. The corn is evidently better, larger and stockier in every way, and he thought it was a remunerative investment. The speaker then quoted from a bulletin from the Department of Agriculture at Washington. In red clover one-half of one per cent. is ammonia, white clover is the same, alsike and crimson clover each have four-tenths of one per cent. Phosphoric acid is in red and crimson clover in twice the quantity that it is in white clover and alsike. In crimson and red clover there is very much more free plant-food and much more provender for stock. The richest of all the legumes is the yellow lupine. For growth and hardiness crimson clover equals the red, as it stands the winter in Maine. It came from Delaware here, and the speaker advised using the Delaware seed. The crimson clover will not last over for three years like the red. The quality of hay about equals the red clover, and for stock it has more protein. It is more digestible than the red. In plowing it under in orchards some recommend that the heads be left sticking out, so that it will reseed itself. In Southern New Jersey it is being used extensively on sweet potato land that is light. In fact, Jersey seems to be its home. Mr. Denise here resumed his seat, and the subject was thoroughly discussed.

David Baird spoke of his experience with the clover in orchards. About the first of August he seeded down a part of a peach orchard of 6,000 trees. He was caught by dry weather and the grass became dead before he turned it under. He did not know whether it was lost or not, as it seeded itself and he turned it under when in bloom. One would be convinced of the value of the crop if he could see the orchard. It looks 100 per cent. better in appearance at the present time. He had treated the pear orchard the same way and the fruit looks nice. He had to thin it out to keep the trees from breaking.

D. D. Denise had been sowing the crimson clover several years and let it reseed itself. He used it principally in orchards and in corn. He thought that even if no benefit be received from the nitrogen, by its simply mellowing the land the cost was equaled. Two orchards which have reseeded look very fine and he did not propose to plow it in if it makes a success in this way. It seems to keep the ground in a good, mellow, loose condition. "It pays every man to sow crimson clover," said Mr. Denise, and, in conclusion, he said, "if you don't think I am a firm believer in it, come out and see."

Mr. Baird recommended sowing it late, so as to avoid its being killed by the sun.

D. D. Denise said he did not use ammonia and nitrogen in fertilizing in orchards where he had crimson clover, he used bone.

Holmes V. M. Dennis said that three or four years ago he took out a strip of early potatoes, but the price went down and he stopped taking them out. In this strip he sowed crimson clover. In the following season after this, where every row of potatoes crossed this strip the potatoes were better.

Daniel Jones said he had trouble with it, and had never been able to get it to live, it had died so soon.

Peter Conover had used it every year, and never cut it.

Samuel W. Jones said that he cut it as hay and the stock liked it.

Frank Denise thought it was fine for light soil if one can get a crop, which he never succeeded in doing. In orchards it was a very nice way to mow it and let it lie there.

William H. Reid was of the opinion that it kept the ground in good condition without plowing.

John H. Denise said it was all right to do that on loamy soil. He had tried both and had found it better to plow it in. If it were plowed it would leave the ground clean and there would not be so much harbor for insects as if the stuff were left there.

“Seeding for Grass without Grain” was the next topic on the programme for discussion.

D. D. Denise stated that he had never had a great deal of experience in sowing grass in that way. He had had better luck on low ground and had seeded but little upland. The weather has everything to do with it, and he was not going to grow wheat this year at fifty-five or sixty cents a bushel. If you are going to seed in the spring the weeds are likely to get the best of you, but if you seed in the fall the weeds are not so liable to grow.

John H. Denise told of having sown some crimson clover on timothy. As the timothy ripened the crimson clover blackened but did not spoil the hay. He had 30 per cent. more timothy, and thought the clover was a nurse crop for the timothy.

Before the meeting adjourned John H. Denise asked several farmers present for their opinions as to the percentage of crops for this year. Figures were given as follows:

Corn, 75 to 100 per cent.; potatoes, 40 to 85 per cent.; wheat, 60

to 100 per cent. ; rye, 60 to 110 per cent. ; grass, 75 to 90 per cent. ; strawberries, 80 per cent. ; blackberries, 50 per cent. ; raspberries, 80 per cent. ; grapes, 30 per cent. ; asparagus, 75 per cent. The higher figures were given by a gentleman from near Matawan.

The fourth and annual meeting was held November 24th. After the regular business, election of officers, &c., the Board voted to have a course of six lectures by Prof. J. B. Smith on "Economic Entomology." President Wm. H. Reid then delivered his annual address as follows :

PRESIDENT'S ADDRESS.

Gentlemen and Members of our County Board—A year has elapsed since our last annual meeting, that will pass into history as one of almost if not quite unparalleled discouragements to our occupation. A year ago we found that in the midst of a growing business depression that the farmer was furnishing fewer failures, less of protested paper and less of want than any other occupation in our land, but now we seem to be sharing with business and commercial circles our full proportion of misfortunes and financial calamities, and many of us will be thankful if one year's time is the only loss we have to sustain.

With light crops, produced by an unusually severe drouth, we thought we were justified in expecting fair prices, but this season's markets seem to have totally ignored the law of supply and demand, and prices have been and are very disappointing.

Yet, notwithstanding the very unfavorable conditions during the growing-season, a number of our members have succeeded in producing some very notable yields.

The agricultural exhibits at county and State fairs show the same to be true in other counties of our State.

Inquiry and observation have revealed to us the fact that these successful growers stand in the front rank of our progressive farmers, and are men who not only work, but who study, read, think, observe and compare.

Study these men, their methods and their results, and I think you will agree with me that as truly as "it is not all of life to live," just as truly it is not all of farming to farm. But we do not wish to convey the idea that farming does not mean work. Successfully carried on it does mean work and plenty of it, but it also means intellect and study.

The day has gone by when brawn and muscle alone count in agriculture. There has been an impression abroad in years gone by, and it still prevails somewhat in towns and cities, that when one is careless and indifferent, when he is too dumb and ignorant to succeed in any other trade, occupation or profession, that agriculture furnished a safe haven where all such can land and find financial success.

If one possesses the above qualifications, and will add to them daily plenty of town and street-corner farming, as a financial failure he will be a grand success.

The qualifications, or rather disqualifications, just spoken of we do not take into account sufficiently in employing and dealing with our help. Why should not we do as mechanics and demand of our employes that they shall have learned the trade of farming, that they shall have a reasonable amount of skill, and that they shall give their minds and their thoughts to their work?

The careless, ignorant help that has been rejected and cast off by trades and shops we pay too much, while on the other hand, when we do succeed in obtaining a skillful, careful and obliging farm-hand we should pay him better and appreciate him more fully.

Blight has been a very serious injury to the fruit-growing interests of our county during the past summer, not only in some orchards destroying the bulk of this year's fruit, but in many cases permanently injuring the trees.

There has also been an unprecedented development of a species of rust of the Kieffer pear injuriously affecting the flavor and market value of the fruit. These would seem to be very necessary matters for study and investigation by our Experiment Station, and we would respectfully call the attention of the authorities there to the great necessity of preventives or practical remedies. It seems to be a fixed law of nature that so sure as a certain kind of fruit or a particular kind of vegetable is grown very extensively in a locality just so sure some new insect pest or some new disease will originate to attack and injure or destroy those crops. Those of us who are growing Kieffer pears may as well settle it in our minds now that we will not grow them as easily in the future as we have in the past; that notwithstanding their apparent iron-clad hardness eternal vigilance will ever be the price of healthy trees and perfect fruit.

The agricultural press and agricultural writers are giving a great deal of attention to the booming of crimson clover, and while many

of us have not had as flattering success as many whom we read about, yet, the claims that "it will revolutionize agriculture" seem to have some foundation, and I think it stands us in hand to give it our closest study and attention with the view that we may trap and grow our own nitrogen, by far the most expensive element contained in our fertilizers.

Our Experiment Station has given a great deal of time and labor to the study of this clover, and in Bulletin 100 has given the results of its labor.

Every Monmouth county farmer should make himself familiar with the contents of this bulletin.

The broadening and enlarging of the work of this station and its method of teaching and giving the results of its labors by University extension are causes of congratulation for us. New Jersey farming is well advanced towards the front rank in agriculture, and this condition is largely attributable to our State Experiment Station and its obliging corps of Professors.

The interest and attention given to its bulletins and the rapidly-growing demand for its courses of lectures are evidences that its teachings are growing to be more fully appreciated year by year.

We, as agriculturists, should by co-operation and otherwise do what we can to hold up its hands and encourage and forward this beneficial work. For a number of years we have been receiving through our representatives in Congress packages claiming to contain new and choice varieties of seeds, but our experience has been that most of the so-called new varieties are really quite ancient and possessed of very ordinary merit. It seems to us that the appropriation voted to the Department of Agriculture for the gratuitous distribution of these seeds among our Congressmen's rural constituents might be used in a number of ways that would be more beneficial to agriculture. Among these we would suggest the further development and extension of experiment station work, the cheapening of the cost of University extension lectures, the improving of our highways or the free delivery of mails in our rural districts. The farmer pays more taxes than any other class, he also pays a very much larger share of his just proportion of these taxes. Why then are we not entitled to as much recognition, and why should we not demand as much at the hands of our government as others receive? Less than a year ago the business organizations of some of our large cities were

asking for one-cent postage. Our government had better by far arrange its mail service so as to treat its citizens all alike with two-cent postage before it attempts to take up the matter of one-cent postage.

The daily collection and delivery of mails in all rural homes, giving to the farmer and his family, as to the city resident, the opportunity to receive the daily paper, and thus enabling him to keep informed and in touch with the times, would, we believe, go a long way towards solving the vexing question of "keeping our boys on the farm."

The frequency and extent of forest fires of late years is a very serious matter to the agriculture of our State, not only on account of the many thousands of dollars of loss annually caused by the destruction of timber and young growth, but also on account of the effects on climatic conditions produced by forest destruction. We would suggest to our Assemblymen-elect that the member who can devise and bring about legislation that will prevent or diminish this great annual loss to our State will be a great public benefactor and will be entitled to a monument erected in our State Capitol.

The disastrous effects of the drouth that prevailed during the past summer, added to that of the two previous years, again forces upon our attention the subject of irrigation.

Some of our agricultural papers have been devoting a great deal of space explaining and discussing the various known methods now in use, and comparing the merits of sub-irrigation and surface irrigation. It seems to me that the appointing of a committee by our Board to gather all available information on this subject could bring about no harm and might result in the discovery of some method that would be practical here and possibly of immense and lasting benefit to the agriculture of our county.

The abundance and prosperity of the last decade have bred and fostered habits of expensive and fast living.

Nor has the farmer entirely escaped being drawn into this whirlpool of extravagance.

Notwithstanding the many discouragements and disappointments of the past season, we have very much for which we should be grateful at this Thanksgiving season.

We need to be taught some severe lessons in economy, and the young man who starts now will be forced to devise ways and means that will establish habits that will be of lasting benefit to him through life.

Our Board should congratulate itself that it is again honored by having one of its own number to represent it in the Legislature.

On account of the immense and rapidly-increasing importance of the potato crop and its effects upon the business and finances of our county, I will suggest a few questions for your careful consideration :

How can we cheapen the cost of production ?

Can we do it by more intensive farming ?

Can irrigation be made practical here ?

Is the treating of seed with corrosive sublimate a success ?

What if any will be the effect on our markets of a reduction of import duty from 25 cents to 15 cents per bushel ?

Can we, on account of Cuban retaliation, safely plant so extensively of American Giants and other shipping varieties ?

If we are to depend on home markets, must we not give more attention to quality ?

It is my hope that these questions, carefully and intelligently answered, may help us to make potato-growing more remunerative and successful.

Prof. B. D. Halsted, State Botanist, addressed the meeting on "Weeds: their Habits, Seeding Capacity, and Methods of Treatment," which was followed by the Directors' annual report, as follows :

ANNUAL REPORT OF DIRECTORS.

As agriculturists, the season for sowing and reaping has bidden us farewell. As individuals, we have asked the question, "What will the harvest be?" We come together collectively to-day to take a retrospect of the year's operations and its results, be it profit or loss. I trust we are not satisfied, but will press on for higher attainments in our chosen occupation. We should realize that we are a favored people as to market, location and adaptation of soil possibilities. Progress should be our watchword, and the advance column our place in the onward movement. Let us close our ears to the prevalent complaint, "Farming don't pay." Nothing succeeds like success, and we can, if we will, make farming pay, and this will do much to cleanse the atmosphere of the miasma of discontent, and then there will be a leaning toward the pioneer industry of this beautiful country, and our lands will be more valuable.

CROP REPORT—TRUSTS.

A stroll through our county in the fruit-growing season soon convinces us that we are pushing ahead in this interesting study and practice, improving quality by fertilization and care, thus sharpening the appetite among the lovers of fruit, and the cry comes, "Give us more." Strawberries, the first to grace our tables with their beauty and toothsome qualities, should find a place in every farmer's garden. As a money crop, this has been a remunerative one; the present year yields reported 1,000 to 5,000 quarts per acre, netting from \$100 to \$400. The yield is 100 per cent.; prices, 9 to 11 cents per quart.

Peaches should have their place where land is suitable, as they find a ready home market. Take the same care of the trees as you would of cultivated crops; fertilize with bone and potash; sow with crimson clover last of August, to be turned under the following May; remove all diseased trees, and keep free from borer. There was 45 per cent. of an average crop; price, 50 cents.

Blackberries and Raspberries gave only a medium crop. Yield, 65 per cent.; price, 10 cents per quart.

Grapes but little diseased; much destruction by the sparrow. Eighty per cent of a crop; prices fair.

Melon-growing has its favorites in the lower townships, and returned a handsome profit among the experts. Yield, 90 per cent.; prices good.

Apples.—This, the king of fruits, must be honored with a liberal supply of plant-food in the shape of bone and potash. Give two or three sprayings at intervals and at the proper time, using the Paris green solution. There was much blight of wood among some varieties; cause not known. For leaf-blight, Bordeaux mixture. Yield, 32 per cent.; price, \$1.25 to \$2, net.

Pear trees in fair condition; but little blight save among the Bartletts, among which is much dead wood. A remedy is needed. Who can give it? The Kieffer takes the lead as to yield, and is gaining in

favor with the grower on this account. High feeding and proper things with bone and potash improve the quality. Yield, 70 per cent. ; price, \$1 to \$2, net.

VEGETABLES.

Potato-growing is on the increase with us, and while it is often met by the enemy, as blight, insect ravages, lack or excess of moisture, or other unfavorable conditions for a consecutive number of years, we can depend on the potato as a safe money crop. The present season's returns have varied widely (from 10 to 100 barrels per acre) as to distribution of moisture, good tillage and soil feeding—three essentials to success. Average yield 58 per cent., or 111 bushels per acre. Price at present writing, \$1.10 per barrel ; price at time of harvesting, \$1.50 per barrel. This variation confirms the statement made by your Board for three consecutive years, that the August and September markets are noticeably ours for this particular crop.

Garden and field-crop vegetables have given handsome returns for the outlay rendered with but few exceptions ; both are worthy a place in the coming year's plans. A good stock of first vegetables should be grown for table supply. Roots for stock-feeding should be more extensively grown. All grain-fed stock thrive better with a partial root diet. Six to nine hundred bushels can be grown per acre. This is a good substitute for ensilage, and a good winter diet for breeding sows. Pickle-growing is receiving added attention, many carloads having been shipped from this county. Asparagus as a field crop has its place among the many. This industry is yet in its infancy, and whoso shall nourish the baby will find a helper in filling a niche in the bank account. Requires heavy feeding. Gross sales from \$200 to \$500 per acre ; slightly affected by drouth ; yield, 90 per cent.

Tomatoes have given a full crop. A prolonged growing-season allowed perfection, whereas early frosts would have caused failure. The prices in the city markets were good. At the canneries, same as former years.

GRAIN.

The corn-grower was agreeably disappointed at the gathering of the crop. The cribs are groaning under their heavier than usual bur-

dens, later plantings giving best yield. Quality excellent. Acreage, 80; yield, 100 per cent.; price, 60 cents.

Wheat-growing is losing its prestige, and is considered by many as a debtor and stricken from the business list. Yet it has its place, and should not be dropped out of our rotation. Acreage, 70 per cent.; yield, 100 per cent.; price, 60 cents. Growing crop in good shape. Rye yield, 100 per cent.; price, 45 cents.

GRASS.

In the early' growing-season we counted on a short crop, but the later rains had a telling effect and we reaped bountifully an extra quality of hay. Timothy, acreage 80 per cent.; yield, $1\frac{2}{3}$ tons.

Clover, acreage 100; yield, $1\frac{1}{4}$ tons per acre.

Mixed, acreage 100; yield, $1\frac{2}{10}$ tons per acre. Price per ton at barn, \$13.

Good stand of grass in stubble and going into winter quarters in fine condition. The seeding to grass alone is gaining favor on account of the low price of wheat, but we must make haste slowly with new things.

The introduction of crimson clover will prove a boom to agriculture. Many acres are seeded to turn under for potatoes and hundreds of acres of orchards are sown with it—experience tells us, with profit.

STOCK.

No prevailing disease. Texas fly troublesome among cattle. Extra feed should be given during their stay. Less stock is kept on the farm, but better care is given; mutton and pork are extremely low in price; not much margin for the feeder. The milk industry is on the increase.

Lettuce-growing under glass, furnishing the demand for this popular salad, is opening a door to a new field of operation that will continue to increase.

Some of the above crops may be in debt to the producer, but there is no guarantee that the same condition of things will exist in the coming year.

This is an age of careful research and consequent progress. No occupation more than agriculture needs the appliance of modern

thought in the infusion of new life into its every view, to compete with the onward march of this day of business rapidity. We must catch its quickening influence and make use of every conceivable method within our grasp. We predict brighter days for this agricultural section in proportion as we utilize our available opportunities.

The output for the year may be a little shortened and the bank account something dreadful, but the smiles of a beneficent Providence have not been withdrawn from us and we are in possession of full and plenty, for which our devout gratitude should be offered.

JOHN H. DENISE,
 DAVID BAIRD,
 HAL ALLAIRE,
 JOHNSON TAYLOR,
 SAMUEL F. FOWLER,
 Directors.

ASPARAGUS SHIPMENTS.

This vegetable has put almost \$47,000 into the pockets of our farmers. The season begins the last week in April and continues until the last of June, some cutting as late as August. The average price this year was very low, and the season only a fair one, netting the growers from \$125 to \$150 per acre. The highest price, \$3.50 per dozen bunches; the lowest, 50 cents—an average price of \$1.25 per dozen bunches. The freight is one-half cent per bunch by railroad. While large quantities are used by canners in the county and a great deal shipped by boat, the following was shipped the past season from a few railroad stations. From—

Freehold (C. B. R.).....	21,529	bunches.
Bradevelt "	83,056	"
Marlboro "	200,054	"
Tennent "	26,740	"
Englishtown "	37,620	"
	<hr/>	
	368,999	"

Average price, \$1.25 per dozen.

THE HUCKLEBERRY CROP.

This is a source of large income to many in Monmouth county, and is a valuable product in the lower section. Buyers paid from

STATE BOARD OF AGRICULTURE.

six to seven cents per quart, while they sold in the Newark and New York markets for eight to ten cents. The cash value of the crop this year in Monmouth and Ocean counties is estimated at \$50,000.

THE LUSCIOUS STRAWBERRY.

The strawberry is the first to be ready for market, and its cultivation in this section is becoming more profitable every year. The season lasted about three weeks, and was a very profitable one. Growers have found that Boston is the best market, and most of the berries were shipped to that place. The average price this year has been nine cents; the highest price eighteen cents, and the lowest four cents. The following are the shipments from this section by bushels:

From Freehold by P. R. R.....	223	
" " " Adams Express.....	1,658	
" " " U. S. Express.....	450	
" " " Central freight.....	15,816	
	<hr/>	
Total for Freehold.....	18,147	
Sold by grocerymen, butchers, and peddlers in Freehold...	767	
Shipped from Tennent.....	1,950	
" " Englishtown.....	1,673	
" " Farmingdale (C. R. R.).....	623	
" " Howell.....	1,025	
" " Bradevelt.....	34	
Carted to shore.....	100	
	<hr/>	6,172
Total bushels raised in this section.....	24,319	

The following table shows the returns to the pickers, growers, commission men and railroads:

24,319 bushels, at nine cents a quart.....	\$70,038 72
Commission.....	\$7,003 88
Freight at forty-one cents a crate.....	9,997 08
Picking at two cents a quart.....	15,564 16
	<hr/>
Total cost to growers.....	32,565 12
	<hr/>
Net receipts of growers.....	\$37,473 60
Received by growers and pickers.....	53,037 76

The freight on a bushel crate is 41 cents, and 77 cents on a two-bushel crate; by express the charge is 50 cents on a bushel and \$1 on a two-bushel crate. Thomas Hulse, of Turkey, sold all his

berries for 18 cents per quart—California Seedling. Often it only took fourteen berries to fill a quart box. Some he measured were eight inches in circumference.

TOMATO CANNING INDUSTRY IN THE COUNTY.

There are seven canning establishments in the county, and a very large business is done in the aggregate. Over three hundred tons are canned in one day, and over six hundred hands are employed. The average yield is ten tons per acre. Over \$60,000 is paid to the farmers annually. There are four factories situated in the eastern part of the county, two at Red Bank—Stout's and Broadmeadow's—Bucklin's at the Phalanx, and Hazard's at Shrewsbury; Prickett's at Lower Squankum, Reid's at Englishtown, and Brakeley's at Freehold. Mr. Stout handles about seventy-five tons of tomatoes a day, which fill 10,000 gallon cans. He expects to put up this season about 25,000 cases, 12 cans to a case—or 300,000 gallons. He employs 150 hands and the pay-roll averages \$1,100 per week. At Mr. Broadmeadow's factory a day's work is 23,000 quart cans. He has 121 hands on his pay-roll, his weekly wages \$800 to \$900, and will pay to the farmers \$11,000. W. S. Bucklin's factory, at the Phalanx, is the oldest one in Monmouth, established in 1852. Employs about 90 hands; pay-roll \$700 per week. He puts up from 15,000 to 18,000 quart cans per day; total output for the season, 350,000 cans. He also does a large business in canning peas, asparagus, fruits, and other vegetables. E. C. Hazard & Co. make a specialty of tomato catsup. They contract for 350 acres of tomatoes each season, besides the 35 acres on their own farm. They handle from 3,000 to 4,000 crates per day during their busy time, and will dispose of 1,800 tons during the season, an outlay to the growers of about \$14,000, at \$8 per ton. Employ 200 hands; pay-roll from \$1,200 to \$1,500 per week. In a day's run they put up about 20,000 quart cans. This factory runs all the year; the pulp is put in cans during the summer and made into catsup during the winter. Twenty thousand cases of 24 pint bottles to the case, are put up every season; equal to 480,000 bottles. They also manufacture tomato sauce, put up in half-pint pots and pint bottles—about 1,000 cases, two dozen in a case. Nearly 50,000 boxes of table jelly are made every season at this factory, flavored with fruit syrups. The canning of asparagus is one of the

leading features of this company. They put up 100,000 cans a season, and for this product they pay the farmers about \$10,000 per annum. It takes a bunch to a can. Mr. J. Brakeley, of Freehold, cans tomatoes and peas. To supply his factory it takes 300 acres to grow the peas, and 200 acres to grow the tomatoes. Of the other two factories in the county I have no data.

In addition to the above the Secretary furnished a quite extended list of individual crop-yields of leading farmers, which are omitted from this report for want of room.—SECRETARY.

MORRIS COUNTY.

OFFICERS FOR 1895.

President.....HON. A. W. CUTLER.....Morristown.
Secretary.....W. F. ELY.....Madison.
Treasurer.....H. W. YOUNG.....Afton.

BOARD OF DIRECTORS.

HORACE FORD.....Boonton.
J. S. GOLDBURG.....Afton.
WM. E. COLLIS.....Chester.
B. S. CONDIT.....Troy Hills.
J. R. RIGGS.....Milton.
J. FRANK LINDSLEY.....Morristown.
FRANCIS OLIVER.....Mendham.
W. H. SHARP.....Flanders.
J. H. MILLEDGE.....Montville.
JOHN OLIVER.....New Vernon.
T. O. DOREMUS.....Pompton Plains.
J. A. CASTERLINE.....Dover.
WILLIAM H. GREEN.....Succasunna.
S. H. HANCE.....Drakestown.

DELEGATES TO STATE BOARD.

J. ANDREW CASTERLINE.....One year.
WM. F. ELY.....Two years.

ANNUAL REPORT.

The Morris County Board of Agriculture held its annual meeting at Afton, on December 29th, 1894.

The meeting was presided over by the President, Hon. A. W. Cutler.

The above officers were chosen for the year 1895.

The day proving to be the coldest 29th of December on record, with a very sharp wind, therefore the attendance did not number as many as last year. This meeting (being the fourth which the Board has held for the year 1894) was called for the annual election and a discussion of what would be of interest to the farmers, and if the day had been fine we had reason to expect the largest meeting since the Board was organized. Before proceeding with the discussion, the Secretary said as a resolution was unanimously passed at the last meeting that he should have the proceedings printed and sent to our County Boards and different organizations, he would like to state that he had some 1,150 copies printed, which he sent out, and at the same time a circular calling their attention to those resolutions, and asking their co-operation in whatever they might approve of, especially to the publishing of the laws, the stealing of our school funds, the increase of officers and increase of salaries in New Jersey. He then proceeded to show the great interest manifested from the different parts of the State in the resolutions forwarded to him from other County Boards, Granges, Farmers' Alliance, Monmouth Fruit-Growers, &c.; also many personal letters, among them letters from Senator Ketcham, of Essex, and Senator Bradley, of Monmouth, expressing their heartiest indorsement and the wish to do all in their power to aid us; also extracts from papers in different States, showing the outrageous manner in which New Jersey was squandering money on her State officials; and also showed that the New Jersey State Board had concurred in about all the Morris County Board had passed.

The first meeting of the Board for the year 1894, which was held at Morristown on July 25th, to discuss "Stone Roads and the Bonding of the County," was well attended by parties from every section of the county.

The meeting was called to order at 2:30 by Hon. A. W. Cutler, President of the Board. There were about seventy-five present, but it was a representative meeting, being composed of leading and influential men from their respective townships.

It was announced that the State appropriated only \$100,000 for the roads for 1894, and that this had all been asked for by other counties, so Morris county could not expect anything for the next three years from this fund.

After much discussion, Mr. Randolph moved that the Freeholders be requested to raise, by tax or bonds, \$25,000 to be spent on macad-

amazing roads the current year, and on such roads as they may select.

In speaking to the resolution, Mr. Randolph said that we ought not to spend the sum of \$350,000 (the limit allowed under the law for Morris county) during the first year. It would be neither wise nor just.

Freeholder Bartley, of Washington township, said that a very large majority of taxpayers were opposed to spending so great a sum as \$350,000 on roads next year. There were none in his township, so far as he could find, in favor of it, and he read a long list of signatures attached to a request to the Freeholders protesting against any such extravagance. He said that not a single person who had been asked refused to sign it, and he advocated the passage of the Randolph resolution.

Mr. Seward, of Chester, also spoke in favor of the resolution.

Mr. Stiles also advocated its passage. He said that it would be most unwise to go ahead without experience and try to macadamize all the roads in the county. The first roads built must of necessity be largely experimental.

Mr. Nelson Hughson, of Randolph township, made a sensible speech in favor of the resolution, and said they were making excellent roads in his township now. They had a stone-crusher and each township should have one. He cordially invited Mr. Nishwitz to go and see what good roads the Randolph committee had built.

Mr. A. L. Salmon, of Mount Olive, offered an amendment that the \$25,000, if raised, be spent pro rata in the townships. After considerable talk this amendment was lost by a vote of 32 to 18.

John Stickle, Esq., of Rockaway, said they had made macadamized roads in that township, 20 to 30 feet wide, 2 feet deep, at an average cost of \$3,000 per mile.

Mr. E. S. Burke opposed the resolution, and wanted the county bonded for the full amount possible—\$350,000.

After considerable more talk the \$25,000 resolution was carried almost unanimously, only two or three voting against it, and the meeting adjourned.

The next day, however, the Freeholders met, and, altogether ignoring the act of the meeting, resolved by a vote of nine to six to bond the county for \$350,000.

The second meeting of the Board was held at Morristown, of which the "Chronicle" said :

The Morris county branch of the State Board of Agriculture held a meeting in the County Hall of the Court House, on Wednesday, November 12th.

Owing to the storm and general unpleasant condition of the weather, the attendance was light, but the interest was keen and the attention given to the reading and discussion of the papers was close, and manifested the growing enthusiasm which our farmers are taking in the advancement of the agricultural interests of our State.

The meeting was called to order by the President of the Morris County Board of Agriculture, Hon. A. W. Cutler, who, after a few words of welcome and general introductory remarks, introduced Franklin Dye, Secretary of the New Jersey State Board of Agriculture, who expressed his interest in the work of our Board and the desire of the State Board to co-operate with us in advancing the agriculture of Morris county in connection with the other counties of the State. For this purpose he had brought with him two experienced and practical men who would speak to us at this meeting. He then presented Mr. Cheesman, President of the Eastern Buttermakers' and Cheesemakers' Association.

Mr. Cheesman read a very interesting paper upon "Shelter and Ventilation for Cattle."

Mr. Cheesman was followed by Mr. Chapman, of Tompkins county, N. Y., who gave a very interesting talk upon "Poultry-Raising for Profit." Mr. Chapman presented charts to illustrate his lecture, showing the methods of constructing a chicken-house, and a statement of the profits from 600 hens for one year, amounting to over \$1,100. For the guidance of those engaged in the business of poultry-raising, Mr. Chapman gave the following directions, viz.: Keep your hens warm. Cover the floor of the roosts with one foot of chaff and road dust, and make your hens scratch for a living. Do not cover your hen-house with glass, as such houses in winter are hot in the day and cold at night. Give plenty to eat when moulting or laying. Feed a ration best adapted to produce the result sought, corn for heat and fat, wheat and other albuminoids for eggs. Always have shells and water in your hennery. Feed green food in summer and a few green vegetables in winter. Cull your flocks for the best layers. Do not allow laying hens the advantages of mixed social intercourse, as it is likely to divert too much of their attention from their proper business. Avoid frightening young hens. Keep your houses clean and

MORRIS COUNTY.

thus prevent disease. If these rules were strictly adhered to, Mr. Chapman would guarantee success to the poultry-raiser.

Both papers were eagerly discussed and highly appreciated, and after a few words by the Hon. Edward Burrough, State Road Commissioner, a vote of thanks was extended to the speakers, and the meeting was adjourned to meet Wednesday, December 19th, at 2 P. M., when Mr. Burrough will deliver an address upon the interesting subject of "Road Improvements in New Jersey."

The third meeting of the Board was held on December 19th, 1894, of which the "Jerseyman" said :

AGRICULTURAL SOCIETY MEETING.

There was a large attendance at the adjourned meeting of the Agricultural Society, in the County Hall, on Wednesday afternoon. Hon. A. W. Cutler presided, and said that as the matter of improved roads was in contemplation at the present time, it had been thought wise to have addresses on the subject by men who had practical experience in the work. He introduced Mr. E. G. Harrison, of Asbury Park.

The speaker prefaced his remarks by saying that he had come to talk *with*, not at or to, the people on the question of road-making, which was a common-sense question for common-sense men to discuss ; it was a work for practical men, not engineers (and on several occasions he had a shot at engineers and engineering in connection with road-making, but on the business card of his firm the word "engineer" occurs no less than three times, which would seem to indicate that engineers had their place even in road-making). He said the economic question of road-making is a very important one ; to build a mean road because it is cheap is a poor policy, and to build an unusually expensive road is also poor policy. Expensive roads could only be built in wealthy communities, but it was possible to build good roads at reasonable prices for any community. He had built in Burlington county 11½ miles of stone road for \$39,775, or about \$3,460 per mile, and had to bring all the stone from a long distance, so that the freight bills were one-third of the expense.

In regard to the practical work of making roads he presented the usual form : The bottom of common field stone, not too soft or shaley ;

the depth of the road depends on the soil, sandy soil requiring less depth than springy or wet soil; stones should be about ten inches long by six inches wide, of cone shape, the largest part down and placed close together, the interstices being filled in with smaller stone; the top should be of a tough, rather than a hard stone, and of a nature to pack well. In practice he had found an eight-foot road practicable; if the cost of a wide road cannot be borne, use common sense and have a good narrow one; to make passing of teams easy make a shoulder about three feet wide on each side of main road of local material and the wash from the stone road will soon make it hard; a gravel track seven or eight feet wide on each side of the stone road is considered the ideal road at Asbury Park, the light driving being almost always on the gravel road and heavy teaming on the stone road; the South Jersey roads are from six to eight inches deep, and are sufficient for four-ton loads. In answer to questions he said the grading of roads was an important question; so far as possible grades should not exceed five feet in a hundred. While it was not practicable to cut down mountains it was feasible to do away with many heavy grades. Drainage is also very important, as water is an enemy of roads; constant repairs should be carried on, as a neglected stone road will soon go to pieces. In their section it cost about \$50 per mile for repairs; roads should be made high up with plenty of slope, one inch to a foot is about right, and on hills might be increased. Roads should be built according to the location of the ground, and not according to some cast-iron plan by an engineer.

Mr. Edward Burrough, State Commissioner of Public Roads, was introduced, and gave some practical experience with roads in his vicinity over which his teams could haul loads of four tons as easily as they did one ton over the old roads, thereby saving him several hundred dollars every year for cartage. He gave a general account of roads and their improvement from the time of the Indian paths up to the era of the turnpikes, which he said had had their day and now something better was needed. In regard to road-making, he said the cost of laying poor stone is as great as laying good stone, hence it was economy to use good material. A road twelve feet wide, or even ten or nine feet, is wide enough for most localities. Make the center twelve inches thick and side six inches thick, and it will be satisfactory. In their county last year they contracted for building roads at \$1.15 per square yard, and this year the same kind of roads were

built for 79 cents. Six-inch roads are built for 42 cents per yard, which is cheaper than gravel roads can be built. Under the State Aid law roads must be twelve feet wide, and he thought the law should be amended, making nine-foot roads legal. Will it pay to build good roads? It pays in their section and will pay here. About \$450,000 per year is spent in this State for roads, and in Morris county \$55,000 was spent last year. If money was borrowed to build good roads, less than half of this amount would pay the interest and the balance could go to keep the roads in repair. He gave a history of the agitation for improved roads from 1846 to the present time, and showed the results of the present Township Road law. He urged the county authorities to look well after their roads when built, and to keep trolley lines off the highways. If they went through a county, let them go on the side of the road and pay for their right of way. In closing, the speaker said that out of sixteen States New Jersey was the single State left that was giving aid to road-building, the other States having dropped the system. Large sums of money were spent on camp grounds and armories which benefited but few, and why should not State money be spent on roads, where many would be benefited? Hold contractors responsible for at least a year for roads built, as the first winter and summer are the trying time for stone roads. The subject was illustrated with diagrams and blue prints.

At the close a vote of thanks was tendered the speakers, and the meeting adjourned.

You Are Viewing an Archived Copy from the New Jersey State Library

OCEAN COUNTY.

OFFICERS FOR 1895.

<i>President</i>	CHARLES M. ROBER.....	Cassville.
<i>Vice President</i>	W. H. WOOD.....	Lanoka.
<i>Secretary</i>	M. G. POHL.....	Toms River.
<i>Treasurer</i>	H. R. WILLS.....	Toms River.

DIRECTORS.

ISRAEL GIBERSON.....	Toms River.
J. C. CASLER.....	Cassville.
B. MENDELSON.....	Toms River.

DELEGATE TO STATE BOARD (two years).—W. H. Wood, Lanoka.

ANNUAL REPORT.

BY M. G. POHL, SECRETARY.

During the present year the Ocean County Board of Agriculture held five meetings. March 10th we assembled at the Court House; Professor Halsted, Mr. L. F. Schanck, of Marlboro, and visitors from Pennsylvania, were present. The Professor gave to us a remarkably interesting lecture on "Fungus of White and Sweet Potatoes." The illustrations could not fail to be a lasting information to one and all.

Mr. L. F. Schanck handled his subject, "Finances and the Depreciation of Farm Value and its Products," in a masterly way; the deepest interest was manifested.

At our September meeting, the first of the month, the members held the first exposition of farm products in the county. Mr. Patrick Davitt, a thorough gardener, had extremely fine specimens of grapes. His onions—Spanish King—he said yielded this unfavorable season 600 bushels to the acre. Mr. Charles M. Rorer furnished different kinds of peaches. M. G. Pohl brought watermelons, &c., &c.

Apples sprayed and unsprayed gave us an opportune chance to discuss spraying, which has been so far almost entirely neglected. This object-lesson has brought a change in the matter; henceforth spraying will begin to make our fruit harvest a better one.

At the same meeting the Secretary gave a description of a visit made in Camden, N. J., to a farm conducted by Chinamen. Nearly all the products were new varieties to him, such as grown in China. These people have learned the force of co-operation and economy, combined with diligence and the knowledge of doing work right. Their efforts have proved a rich harvest to them.

The last meeting held November 24th. Principal work done, to establish a new market elsewhere. The annual election will be held January, 1895. The membership has increased to twenty-three.

A review of the year now at its close has proved to us farmers the most unfavorable ever known. Suffering for the third time with drouth, the length of the same this year over three months, with the maximum heat of 102 degrees in the shade, is it a wonder that our crops failed to reward our labor? To say more about it is of no good; let us concentrate our intelligence to meet calamities and overcome them.

Fortunately for the inhabitants of this county, our natural resources are very great. Adjoining Barnegat bay, the county has over twelve thousand five hundred acres of meadow upon which salt grass, black grass, blue-head and other grasses grow year after year without care or trouble. The crop this year—10,000 tons—is estimated to reach the sum of \$80,000.

Wild berries, principally huckleberries, which grow in large quantities, are another money-making crop to our working classes; the benefit derived therefrom is estimated as high as \$50,000 in 1894.

Beach plums, a low bush growing in sandy soil, bears any quantity of small, delicious plums, highly prized for preserves, but they are not much gathered for market, why I cannot state.

Teaberries, sold in cities at five cents a small glass; the leaves of which give an oil much used in candies and for medical purposes.

Moss gathered and baled is sent to nurserymen for packing their stock.

The cranberry is one of the principal crops. The reports complete, to be found in reports of the Cranberry Growers' Association, give 44,833 bushels or crates; over 28,000 bushels less than in 1893.

Oysters this year are more plentiful than many years before. Estimates given by oyster planters between Barnegat and Little Egg Harbor report a shipment of 1,500 bushels per week ; sorry to say they are sold by dealers under different and assumed names.

From Tuckerton about 10,000 clams are shipped for every working day.

Industry, energy and ambition are sorely needed here. ; go where one may, improvements made, with but few exceptions, are the work of newcomers, foreigners, so-named here whether born in other sections of New Jersey or New York State.

There is plenty of room for newcomers and investment of capital ; such, properly directed, cannot fail to give ample reward.

We have no creameries and no canning factories for our fruit, wild or cultivated, although we have berries in any quantity, oysters, fish, tomatoes, peas, &c.

The climate is very healthful ; the water pure and clear. The streams with rapid current will develop thousands of horse-power when once harnessed.

The time is not far when Ocean county will bloom with industrious colonies, and bright faces will show that dawn has come at last.

To a great extent, the primitive methods of taking advantage of our natural resources are our drawbacks to an advancement in farming. The native, raised with little or no schooling, finds a greater and more profitable use of time in gathering berries for four or five months in the year. Here they are experts, and as such can earn from \$1.50 to \$4 per day ; while, on the other hand, they are lost irredeemably as to progress. However sad these facts, we must not condemn the old folks as long as they will not hinder progress. Sorry to say, this is done too often by hindering the new generation from going to the public schools. This is what we must call injustice to our time and nation. Can such be remedied, and how ?

The first step in the right direction has been made with our new School laws. Of course, there are many found already to condemn these laws ere they had a chance to learn something about them. To make these laws perfect, we must have them amended to compulsory school laws, and fines for wanton neglect.

We also want a high license for gunning or prohibition of killing quail and pheasants, as well as all song-birds, for the next five years,

for these birds are our best friends, and aid in subduing weeds and insects.

Another need is the strict enforcement of all laws in existence—such as dog laws, trespass laws—for the benefit of the whole community. Such enforcements are needed as much as our daily bread.

Cattle.—The improvement of stock goes with the advancement of man, hand-in-hand. As long as rational feeding is not practiced, as long as stock is for months turned out on the salt marshes, there to be exposed to the attacks of millions of mosquitoes, flies and other insects, we cannot expect anything else from such a degrading process; and when heifer calves five to six months old are made to breed, nothing but inferior offspring must be expected. Furthermore, when stock is fed summer and winter on salt grass alone, this trodden in the barnyard and trampled under foot, what can we expect more than scrub stock? The consequences are, no profit to the owner, and a more or less unfit product, as milk or butter, for the consumer.

Horses.—But few are raised, 8 per cent., perhaps, of what are needed in the county. Generally good sires are used, and prices are high. Within the last year the horses are of better breed, and kept in more favorable conditions.

Swine are raised principally for home consumption; not many are sold in the market. Their health is on the average good, but men, in their blindness, expect them to be hogs after irregular feeding. Filthy conditions of pens, and insufficient and poor water during the hot season, may cause diseases which are readily pronounced cholera, when actually the malady is nothing else but neglect.

Sheep.—We have next to none. This scarcity is owing to the large number of dogs kept for hunting purposes.

ADDITIONAL QUESTIONS AND ANSWERS.

1. We have evidently sufficient laborers.
2. Wages remain stationary; \$15 and board per month, 12½ cents per hour without board.

3. What crops are receiving more attention than five years ago? Crimson clover and asparagus.

4. In either case, is this owing to larger or smaller profits, or to increased or diminished productiveness? Both reasons and poor home market.

8. What can farmers as a class do, in your judgment, to improve their condition and advance their interest? Improve themselves.

9. Are farmers taking a deeper interest in the subject of farmers' organizations? Only a few do so.

10. What, in your judgment, is the greatest need of agriculture to-day? Push, brain-work in the right direction, less politics.

You Are Viewing an Archived Copy from the New Jersey State Library

SALEM COUNTY.

OFFICERS FOR 1895.

<i>President</i>	RICHMAN COLES.....	Woodstown.
<i>Vice President</i>	EDWIN L. BORTON.....	Woodstown.
<i>Secretary</i>	H. C. PEBBY	Friesburg.
<i>Treasurer</i>	REEVES FLITCRAFT.....	Woodstown.

DIRECTORS.

RICHMAN COLES.....	Woodstown.
EDWIN L. BORTON	Woodstown.
H. C. PEBBY	Friesburg.
REEVES FLITCRAFT.....	Woodstown.
GEO. H. KEBBY	Woodstown.
CHARLES R. LOVELAND.....	Cohansey.
J. W. PANCOAST	Sharptown.
EMPSON ATKINSON... ..	Woodstown.

DELEGATES TO STATE BOARD.

CHAS. R. LOVELAND (one year).....	Cohansey.
M. T. M. GARRISON (two years).....	Elmer.

ANNUAL REPORT.

BY H. C. PEBBY.

Since the last annual report we have held four meetings. The annual meeting January 23d, followed by a Farmers' Institute, was held in the Opera House in Woodstown, with a large attendance of farmers and others. The forenoon of the first day was taken up with the regular business of the Board.

Franklin Dye, Secretary of the State Board, conducted the Institute, and the interest increased to the end.

Mr. C. E. Chapman, of Peruville, N. Y., gave an excellent address on "Potato Culture," in which he showed there is more money in growing potatoes than grain.

Prof. J. B. Smith, State Entomologist, gave an address. Subject, "Insects Helpful and Hurtful to Agriculture," in which he said we are dependent upon insects for our crops. If it were not for insects it would be impossible to raise fruit, as they carry the pollen from one flower to another and pollinize the fruit trees. Of all the insects bees are the most useful. All insects that feed upon plants are relatively injurious, and the beneficial insects are those that destroy the former; and among these there is a great struggle for life. This is a necessary law to check the tremendous increase of these insects, as they multiply so rapidly. A great many insects can be kept in check, but not one farmer in one hundred does anything to reduce the number. As an example, the codling moth could be exterminated in four years by an application of arsenites, if every farmer in the State would combine for the purpose. A great many insects can be destroyed by good cultivation. The tomato worm can be destroyed by fall plowing corn-fields. The Professor recommended kainit as a fertilizer, as the salt in it is destructive to insects.

The following questions were discussed: Is the present price paid farmers for tomatoes at the canneries consistent with the price of canned goods? To what extent would the introduction of electric roads connecting the principal towns of this and adjoining counties benefit the farmer? Mrs. Ella A. Boole, of New York, being present, gave a short but stirring address on temperance. In the evening, Miss Belle Mooney, Principal of Bacon Academy, gave an excellent address. Subject, "Possibilities." Discussed the following questions: "Should the Boys be Kept on the Farm, and if so How Can it be Done?" J. W. Pancoast gave an address. Subject, "The Low Prices of Products—the Consequence and Cure." Wednesday morning, Mr. Chapman, being present, answered some questions on potato culture and then was asked the question, Is there any money in hens kept for eggs only? He replied as follows:

In our town there are more dollars' worth of eggs sold than butter, and it is a dairy town. Many of them keep from one hundred to eight hundred hens. They can make \$1 apiece, clear of all expenses. Some have made as high as \$2 per hen. A good price for eggs can be secured if there is a regular supply. Now, to secure this regular supply, eggs mature in eighteen hours, so that a hen ought to lay an egg a day, and then give her six hours' rest each twenty-four hours. Hens will not lay when moulting, so that there is an enforced period

of rest. To supply this lack, pullets want to be reared to take the place of the old hens when moulting. As to feeding, as soon as the chickens are old enough the cockerels and pullets are separated, and the pullets are fed on highly-nitrogenous food, to make flesh and muscle, and not fat. Corn makes fat, but does not make bone, muscle or feathers. Wheat bran and middlings, with a cutting of clover hay, is put in a barrel at night and hot water poured over it. This is fed in the morning, and whole wheat at noon. There is nothing better than wheat. The hens are kept in houses and pens all the time. This is better than allowing them to run out part of the time, as they are satisfied, providing the feed supplies every need of their system. Their quarters should be warm in winter, and, if not, some corn is necessary to provide fat for the necessary heat of the body. Green food is supplied, and cracked oyster shells are kept constantly in boxes, as well as gravel. Keep about thirty to fifty hens in a pen. Be careful not to frighten your hens, as the good layers are usually sensitive, and actual demonstration has proven that it will cause them to lose a day's laying.

Ex-Governor Hoard, of Wisconsin, was then introduced and gave a most excellent address on the dairy.

President Coles read a paper from A. A. Slack, Treasurer of the Dairymen's Association of Pennsylvania, in which he stated that if it were not for the Association milk would be as low as wheat. In the afternoon ex-Governor Hoard again addressed the Institute. Subject, "The Temperament of Dairy Cattle."

Following came a paper on "Woman: Her Political and Social Duties," written by Annie L. Robbins, and read by Mrs. Georgie Duell. Also a paper by Richman Coles. Subject, "Farm Conveniences." The addresses and papers were interspersed with music by the choir, and answering questions from the query box, and the Institute was pronounced a success.

The next regular meeting of the Board was also held in Woodstown April 25th, when Miss Jessie Colson, President of the Naturalists' Field Club, made some remarks and exhibited some specimens of weeds, corn, &c. She was followed by John Repp, a practical fruit-grower of Glassboro, who gave a talk on his methods and success in spraying fruit trees. He said he had been unable to raise fruit until he began to spray his trees, but now he secures the finest kind of fruit. He sprays his plum trees when in bloom, and the

pear trees he sprays for leaf-blight. He uses Paris green chiefly, and sprays about six times during the season. It costs him seven and one-half cents per tree for apples and six cents for pears. He also raises fine grapes by spraying. Three men can spray 500 large trees in a day.

Franklin Dye gave an excellent address on "The Rewards of Progress."

The next meeting was held in Pittsgrove July 26th, when the following question was discussed, "Is the Present Rate of Interest Justifiable with the Prices of Farm Production and General Business of the Country?" Miss Jessie Colson exhibited specimens of grass, &c., and gave a talk on the same. President Burrough, of the State Board, then addressed the meeting on the "Advantages to Agriculture Derived from the Columbian Exposition." Also the following question, "As Wheat-Growing is no Longer Profitable, What Shall be Substituted as a Rotation Crop?"

October 24th the Board met in Elmer, and was addressed by Prof. E. B. Voorhees. Subject, "Feeding Dairy Cows." He considered the subject under four heads, viz., regularity, uniformity, sufficiency and right proportion. A properly-balanced ration must be $3\frac{1}{2}$ fat, $3\frac{1}{2}$ casein and $4\frac{1}{2}$ carbohydrates, with bulk in addition sufficient to extend the alimentary system, keep the animal in good physical health and prevent the hungry feeling there will be if the bulk is lacking. The feeding must also be regular. It is necessary that every feeder should know his animal, and must not feed it as if a machine until he knows what it requires. Success in the dairying business includes knowledge of how to buy feed and how to utilize farm products. Many times the farmer is wasting money in feeding home products, for the reason that he don't get the right proportions. Food grown on the farm is largely made up of carbohydrates. He must, therefore, buy fat and proceed to balance the ration. When the farmer sells grain he sells part of his farm; when he buys he must answer whether he has gained or lost. If he buys cotton-seed meal at \$22 per ton, he buys food value and fertility (nitrogen, phosphoric acid and ammonia) equal to the full value. When he takes out the manure he returns this to the land. Cotton-seed meal is one of the best helps for utilizing the home products. A perfect ration is one in which the constituents are in proper proportion, with bulk necessary to satisfy certain conditions of digestion. For this bulk it

is not necessary to take hay worth \$20 a ton, but straw and cornstalks, so long as eatable, answer the conditions, cornstalks being as good ton for ton as timothy hay. For a ration take good cornstalks as a base, fifteen pounds for bulk; add five pounds Chicago gluten meal or dried brewers' grains, four pounds of wheat bran or middlings, and one pound of cotton-seed meal. This will cost 17 cents, the fertility value in it is $8\frac{1}{2}$ cents; we therefore return a value of one-half. Another rule for a ration is clover hay, five pounds, and cornstalks, ten pounds; three pounds wheat bran, three pounds dried brewers' grains, three pounds Buffalo gluten meal, and one pound cotton-seed meal.

Robert Gwynne, Jr., County Superintendent of Schools, gave an excellent address. Subject, "What Kind of a School shall we Have?"

M. T. M. Garrison, of Elmer, read a paper on "Crops for a Dairy Farm," as follows:

I have been selling milk for over fourteen years, and have handled considerable milk in that time, and at one time my bill for two months was a little over \$600. Still, I have not had the experience of running a dairy farm exclusively, and therefore I cannot speak from personal experience. I have always believed in mixed products, and have never made a specialty of any one. The crops for a dairy farm depend upon the soil and surroundings. I would not recommend a farm for a milk dairy that was very far from market, or that was all upland and no stream of water running through it. In selecting a farm for a dairy business especially, I would get near a station if I intended to sell my milk, and would want low land suitable for pasture, with a stream of water; then I would have a silo, and the crop that would fill it which I believe would prove the most profitable is corn. But the crops for the farm are mixed products, such as we are running in this county. With an upland farm of a hundred acres, we should have at least one field for permanent pasture, and kept permanent by not pasturing too close and top-dressing about once in three years, seeded down with green grass or orchard grass. Mine is half-and-half, but I think either one or the other is better; the orchard grass comes earlier, but the cattle will not eat it when they can get the other. This field will carry me through until after harvest, unless it is a dry season. To prepare for that, I plant

a lot of fodder corn, say two acres, and if it is not needed, it will come in play for winter forage. Then, the first of July, I plant again, and this planting can be between the rows of early potatoes, and the potatoes dug after the corn is up and ready to cultivate. Another crop that should not be neglected is about two acres of beets, of the Yellow Globe or Tankard variety, for winter use. They make a cheap feed, and are better than turnips, because they cause no bad taste to milk or butter.

With these crops and the pasture after the wheat and hay have been garnered, you can carry a herd of twenty to twenty-five cows by liberal feeding when the pasture is short. Or, better still, keep them up and not allow them on the pasture at all during a drouth. To do this when milk is 2 or $2\frac{1}{2}$ cents per quart, butter 12 or 15 cents per pound, and calves 4 or 5 cents, is not making buckle and strap-meet, but is like a storekeeper selling goods for less than they cost. Every farm should have a silo, and the ensilage would be the cheap food that would carry the cows through the winter and through the drouth, and would give the place for the fodder corn that it is next to an impossibility to otherwise cure and keep for winter. Another crop fast coming into favor is crimson clover. It can be sown in corn for early spring pasture, and turned under for tomatoes, potatoes and corn. A gentleman said he raised fifteen tons of tomatoes per acre with this alone. Then, the caring for the crops is as important as the planting. In corn fodder alone it is surprising to see what the average farmer wastes every year by not properly cutting and caring for it. Western farmers are more careful than we in this matter. I have seen more fodder wasted in a ride from here to Camden than I saw in my journey from Philadelphia to the White City.

CROP REPORT.

The season just passed has been a peculiar one, owing to excessive rains in the spring, the rainfall for the month of May being 12.14 inches, which deluged some of the low clay lands, and the drouth following later in the season shortened all crops except hay, which was fully up to the average; the showers during the summer were so unevenly distributed that farms adjoining, often one would receive a shower which would not reach the other, and a difference of one-third in the yield would be the result; yet, notwithstanding all this, on

well-drained, loamy soil, containing a sufficient supply of plant-food, we have had good crops, 89 $\frac{5}{7}$ bushels corn per acre being reported, while the average crop was only about 34 bushels.

Oats were a short crop, as they have been for several years, owing to rust.

White Potatoes.—While the crop in the county has been not more than about half an average one, yet some have had fair crops, especially those who planted late. The most popular varieties are Early Rose, Rural Blush, Mammoth Pearl, Rural No. 2, Magnum Bonum and White Star.

Sweet Potatoes.—While they have not been above the average, owing to the drouth in June and July (no rainfall in the sweet potato district from the 7th of June until the 12th of August), caused the early and late to come on together, and the price has been lower than for several years past.

Tomatoes are becoming one of the most important crops, the acreage the past year being estimated at 6,200. There are thirty-one canneries in the county and the output is estimated at 14,880,000 cans. The crop has not been up to the average, yet we have instances reported of fifteen and sixteen tons being grown per acre.

Farm Help.—Owing to hard times and depression in other callings, help on the farm has been more plentiful than it has for some time past, still in some parts of the county there is still a scarcity. There still seems to be a scarcity of help for housework on the farm. The average wages paid farm hands by the month, with board, is \$15; but few board themselves, and those usually work by the day at \$1.25.

Dairy.—The dairy still continues to claim the attention of the farmers in the county to quite an extent. Butter-making is not carried on at the farm same as formerly. The majority of the farmers either ship their milk to Philidelphia or sell to the creameries, of which there are several in the county. The price paid at the creamery is 2 $\frac{1}{2}$ cents per quart. The wholesale price in the city is 3

cents. The retail price in the towns and cities near by is 6 cents per quart. The average price realized by the farmers for butter being about 24 cents per pound, farmers' butter, as a rule, not commanding as high a price as creamery. Holsteins are considered to be the most profitable breed of cows for the average farmer. In addition to the usual fodder, cotton-seed meal, wheat bran, corn meal and brewers' grains are considered the best feed, a good proportion being two parts corn meal, two parts wheat bran, one part cotton-seed meal and one part brewers' grains. Some of the rations used by our dairymen are as follows :

RATION NO. 1.	RATION NO. 2.
1 quart cotton-seed meal,	$\frac{3}{4}$ wheat bran,
3 quarts wheat bran,	$\frac{3}{4}$ cob meal,
3 quarts dried brewers' grains.	$\frac{1}{4}$ cotton-seed meal.
RATION NO. 3.	RATION NO. 4.
3 quarts corn meal,	$\frac{1}{3}$ corn meal,
1 quart wheat bran,	$\frac{1}{3}$ brewers' grains,
1 pint cotton-seed meal.	$\frac{1}{3}$ wheat bran.

There are several silos in the county and a growing sentiment in their favor.

The proportion of farm stock remains about the same as last year ; about 75 per cent. of the horses necessary for use in the county are raised in it. The most prevalent disease among cows is abortion ; there have been some cases of diphtheria among horses and cholera among swine. But few sheep are kept, the greatest drawback being too many dogs.

The poultry business is quite extensive ; we have a few small farms of four or five acres almost wholly devoted to poultry, and nearly all the farms have more or less. The principal discouragements are gapes, thieves, lice, low prices, and needing more attention than most farmers are willing to bestow.

FRUIT.

Fruit-growing is not very extensively engaged in, the principal discouragements being insects, leaf and twig-blight, low prices, high freight rates and want of time to attend to it. Apples were only about half an average crop. The varieties mostly grown are Red Astrachan, Roman Stem, Early Lippincott, Early Harvest, Gravenstein and Smith's Cider.

Pears were not a full crop. The most productive and popular varieties are Bartlett, Lawrence, Kieffer, Seckel, Sheldon and Beurre Gifford.

Peaches were almost a failure except in a few isolated cases. The varieties which are the most popular are Early York, Mountain Rose, Old Mixon, Stump the World, Crawford's Late and Ward's Late.

CONDITION OF AGRICULTURE.

On account of short crops and low prices, the past season has been on the whole less prosperous than the season of 1893.

The price of farm land varies from \$25 to \$110 per acre, according to location and state of cultivation.

Some lessons to be learned by the drouth are these: To thoroughly cultivate and pulverize the soil among growing crops; keep the weeds down and till no more land than we can cultivate well; organize for mutual protection; make farming a business; respect ourselves and our calling; in short do our very best and trust Providence for the rest.

You Are Viewing an Archived Copy from the New Jersey State Library

SOMERSET COUNTY.

OFFICERS FOR 1895.

President.....JOHN J. BROKAW.....Belle Mead.
Vice PresidentREV. J. D. FERGUSON.....Somerville.
Secretary and Treasurer.....A. P. SUTPHEN.....Somerville.

DIRECTORS.

PETER D. LANE.....Bedminster.
WILLIAM C. LANE.....North Branch.
DR. J. D. VANDERVEER.....North Branch.
A. A. COETELYOU.....Neshanic Station.
JOSEPH FITZGA.....Somerville.
JOHN H. LORD.....Somerville.
A. V. D. POLHEMUS.....Franklin Park.
PETER J. STAATS.....South Bound Brook.
THOMAS C. STREYKER.....Frankfort.
GEORGE V. N. VEGHTE.....Hillsborough.
STEPHEN S. VOORHEES.....Skillman Station.
JOHN SPEBLING.....Stoutsburch.
GEORGE W. BULLMAN.....Plainfield.
A. P. VOORHEES.....Plainfield.
THOMAS C. BIRD.....Warrenville.
ISRAEL C. ADAMS.....Warrenville.

DELEGATES TO STATE BOARD.—David C. Voorhees (2 years), Joseph Fitzga (1 year).

ANNUAL REPORT.

This Board has held four meetings during the year. Our next annual meeting will be held January 12th, 1895.

As we predicted in our last report, the Board is in a healthy condition, growing in membership, and, we believe, is proving a valuable organization for our farmers.

The attendance at the meetings has averaged more than one hundred, and there is increased interest. On December 11th we were

avored with a Farmers' Institute, held under the auspices of the State Board, and conducted by Secretary Dye. An excellent programme followed, with highly-instructive addresses. It was a very stormy, unpleasant day, but the meeting was fairly well attended considering the inclement weather.

The conditions in this county were unfavorable for corn and vegetables; they were seriously affected by a drouth covering the area of the county, with the exception of North Plainfield township. For crops and prices, see statistical table by counties.

From the best information gleaned from the several reports received from different portions of the county there seems to be a sufficient amount of help in the country, but it is not available for the farmers, and they cannot secure enough good help to meet the demand. Factories, railroads, and the presumed easy berths in towns, entice the farm-hands away. For good men, the average wages on a farm, including board, are \$15 per month. Female help is becoming more scarce every year; perhaps among other reasons, one is that many are clerking in stores, offices, &c.

DAIRY.

Butter-making for market is not carried on by farmers as formerly. The butter sells for less than creamery butter in the market and at the country stores, and on account of the scarcity of help, the milk is sold. There are four or five creameries and two or three depots for the purchase of milk in this county. The price of milk at the creameries during the year has been from 2 to 2½ cents per quart.

The impression is gaining ground among our farmers that they work too much land and do not give the growing crops proper attention, either in clean cultivation or fertilizing. The idea is becoming more prevalent to cultivate less land, fertilize more, and to raise more good, marketable produce, with less labor. To accomplish this education is the first principle.

At our annual meeting, held January 13th last, after hearing the annual report of the Secretary, as published in your last annual report, President Voorhees delivered his annual address, containing many valuable suggestions. He advised the farmers not to pin their faith to any political party, because as a rule their blessings are so indirect. He thought much good money is buried in the mud of dirt

roads. He called attention to the fact that though the farmer is receiving less for his wheat and apples, the consumer is paying just as much as ever. The balance seems to be against the farmer. In Somerset county there are 2,046 farmers, with a total of 178,511 acres—an average of 73 acres of tillable land for each farm—yet with all the machinery and better methods of farming now employed, the profits on our crops are less than they were forty years ago. The only hope of the farmer is to reduce the cost of production. The address was practical, and heartily applauded.

In the afternoon Secretary Dye made one of his happy addresses, taking for his subject "The Farmer a Manufacturer." He said that the farmer should co-operate with nature—the farmer the manufacturer and nature the teacher. The farmer must, first of all, learn the laws of nature in the growth of the plant, and then conform to them. The farmer must have faith in himself, faith in his locality, faith in the markets. Farmers should have faith in each other, and unite their efforts to help each other.

The annual address of President Voorhees and the address of Secretary Dye elicited considerable profitable discussion, making this an interesting meeting.

At the quarterly meeting, held April 14th, a large and enthusiastic audience greeted Prof. E. B. Voorhees, Director of the State Agricultural Experiment Station at New Brunswick. His subject was, "How Much and What Kind of Manures to Use." The speaker said a cheap method of fertilizing is to use a basic formula for all the crops, and a specific formula for wheat and hay. He gave the following as a cheap basic formula—100 pounds each of ground bone, acid phosphate and muriate of potash. If 200 pounds were applied to the acre, the cost would be about \$3. He advocated buying materials for fertilizers instead of buying brands, because there was too much waste in many brands of fertilizers. The Professor's address was entertaining and instructive, and highly appreciated.

A paper read by Secretary Sutphen and written by Mr. John H. Lord, President of the Second National Bank of Somerville, described his methods of raising corn. A week after planting, Mr. Lord harrows the ground with a slanting-tooth harrow across the rows. This kills the weeds. Just as the corn is coming up he repeats this operation. This will put the ground in good condition and stop the worms from working.

Our next quarterly meeting was held August 11th. The following questions were discussed by the members :

First. Shall we put in our grass seeds with winter grain, or make them a special crop ?

Second. How much timothy seed should we sow per acre ?

Third. Best varieties of wheat to grow, and the amount to sow per acre for best results ?

Fourth. Commercial fertilizers for wheat and their after-effect on grass ?

Fifth. This season's experience with crimson clover ?

Sixth. Why do not the farmers urge the road overseers to comply with the law for cutting bushes, briars and foul weeds along the roadside ?

These questions were taken up seriatim, and in discussing the first question the argument was in favor of making grasses a special crop. This is growing in favor and is becoming more popular.

Remarks upon the second question gave the range from four to six quarts of timothy seed to the acre at seeding wheat, usually behind the drill.

In the third question the favorite variety seemed to be red wheat, to be sown two bushels to the acre.

Several formulas were mentioned as the best commercial fertilizers, with preference for muriate of potash, phosphoric acid for wheat on high ground, and for grass on low land unleached wood ashes and ground bone, 400 to 450 pounds to the acre.

Mr. Fitzga gave five years' experience with crimson clover. He says it is good for hay and green manure, but does not recommend spring sowing. If sown in the fall, it grows very early and strong, and makes a good corn crop next year. He would sow early in the fall, from 20th to 25th of August, for fertilizing, eighteen pounds to the acre ; for hay crop same amount per acre. It gives a better quality of hay than when sown lighter. For hay crop, sow early in the spring. It should be cut when the majority of heads are in blossom. This is a complete fertilizer.

Number 6. The law is sufficient and should be regarded by the overseers. Farmers should compel them to obey the law.

This was a highly satisfactory meeting, the members expressing

themselves satisfied that it is important and profitable to exchange views upon different subjects.

The next quarterly meeting was held on November 10th. It was attended by about one hundred farmers, and they were well repaid for the time spent together. Their discussions proved interesting and instructive.

Secretary Dye was present and made an address upon the topic, "The Point of Profit in Agricultural Pursuits." He said there were few who found this "point of profit." The point of profit in our business is that degree of progress which we must reach in all its separate details and as a whole, in order fully to succeed. "Have a plan and method in all your work ; give attention to detail."

This meeting was no less interesting and instructive than those preceding it, and it is with pleasure that I report a growing interest in the meetings.

Mr. Bullman of North Plainfield, aptly says: "What the farmers of this section need to make them more prosperous is, to practice a more intensive system of farming. Our good local markets, our close proximity to New York City and its suburban cities, and our connections at all points with the network of Telford roads throughout Union county, give us a great advantage over other sections less favorably located. Daniel Webster once made the remark that 'he that makes two blades of grass grow where only one grew before, is a public benefactor.' He who makes two bushels of potatoes or two quarts of berries grow where he used to raise only one, is not only a public benefactor, but is practicing an intensive system of farming that is a decided pecuniary benefit to himself."

My reports indicate that our people are about equally divided in their opinion of the new School law.

SUSSEX COUNTY.

OFFICERS FOR 1895.

President..... J. A. McBIDE..... Unionville, N. Y.,
Vice Presidents..... { W. P. COURSAN.....
 { W. W. PIERCE.....
Treasurer..... THOMAS ARMSTRONG..... Deckertown.
Secretary..... E. N. MILLEN..... Deckertown.

REPORT.

BY THE SECRETARY.

The past season has not been a prosperous one for Sussex county farmers in a financial sense, still the year has been one of real progress in many ways. It is in times of adversity that we learn our needs, and when our wits are sharpened by the attrition of hard times, we get a grip on the situation that helps us ever after. Farmers are as ready as any other class of men to get out of the ruts when there is really danger of being run over. The general unprofitableness of milk production has produced a growing restlessness among us that is going to result in good to the agricultural interests of the county. Milk-selling is exhaustive of fertility unless more than usual care and skill are exercised in the conserving of it, and most of us have to admit that our farms are not as fertile as they were in the butter-making days of our fathers. Reference to records made by those who farmed our fields before us, opens our eyes to the fact that we have been selling the fertility of our farms by the quart, and we have very little to show for it. There may be exceptions; this is the rule. The farmer is never growing rich while his farm is growing poor. Milk went to an unprecedentedly low price last summer. Feed was high and pasture short. The prolonged drouth made it necessary to feed fodder as in the dead of winter. As a result

cows have not gone into winter quarters in nearly as good shape as though they had fed on succulent grasses all summer. The corn and fodder crops were a partial failure, and if the wet weather in May had not helped us to a fair crop of hay, many farmers would not be able to carry their stock through the winter. So as far as the milk business is concerned it has been a most discouraging and unprofitable season. Those who had given a practical bent to their discontent by planting peaches in former years, showed their wisdom and reaped their reward this season. The crop was a full one and the scarcity in other places made a ready sale at profitable prices.

Requests for shipments came from distant cities, that in many instances could not be filled, because of the excessive cost of freight. Many thousand baskets of fine peaches were shipped from here during the season, mainly to the New York market. This is a crop of growing importance, to which our soil seems well adapted. Twenty years ago the peach-growers of Morris county used to bring loads of their poorer grades of fruit to Sussex to sell it, for there was a popular idea afloat that peaches—even poor peaches—would not grow up here. Indeed, the writer remembers a time, not so far back at that, when a peach orchard in this vicinity was looked upon as a curiosity. Now, probably four in every five farmers have from five to fifty acres planted to this luscious fruit. With equal care as good peaches can be grown in Sussex as in any other county in the State. Careless culture, or the lack of any, has resulted in putting much inferior fruit on the market in former years at unprofitable prices, but this will disappear in part as the greater gain of growing only the best is more fully realized. One well-cared-for orchard is an object-lesson for a whole neighborhood.

This is destined to be a great peach section. Our soil is rather rugged, but it is strong and repays wonderfully well for what is put on it. Fruit trees, as well as cows, must be fed generously to make them profitable. The consignments of fruit that went from our stations told the whole story of the treatment that had produced them.

The apple crop was good throughout the county, the fruit developing remarkably after the autumn rains set in. Buyers from nearby cities took most of the output, paying very fair prices for good fruit. Apple orchards are not given anything like the care that peach orchards get. Little spraying is done, and much of the fruit is imperfect.

The production of other fruits than peaches and apples is mostly confined to what is consumed at home, but there is a growing interest in cultivating the small fruits, and in the near future this county will be a source of supply for the city markets. It is altogether probable that fruit and truck-growing will in time take the place of milk production in this county.

Our farmers are learning the inestimable advantage of conserving fertility by sowing the kind of crops which take off the least. This is in the line of good farming. Sussex county has taken some important steps in the agricultural way during the past twelve months, and is pressing on to the front.

You Are Viewing an Archived Copy from the New Jersey State Library

UNION COUNTY.

OFFICERS FOR 1895.

PresidentOGDEN WOODRUFF.....Elizabeth.
Treasurer.....ROBERT WOODRUFF.....Westfield.
Secretary and Librarian.....F. E. WOODRUFF.....Cranford.

DIRECTORS.—John C. Magie, E. P. Bebee, D. B. Wade, Gideon Ludlow, Dennis Long.

DELEGATES TO THE STATE BOARD —F. E. Woodruff, John C. Magie.

REPORT.

BY THE SECRETARY.

The Union County Board of Agriculture was organized in 1868, and re-organized in 1885, being, I believe, the oldest one in the State.* It was first organized as a Farmers' Club, after which the name was changed to the present one. Some of the most successful farmers and milk producers of our county have been members of this Board, and I believe if more of our young farmers could be induced to attend our meetings the practical knowledge and experience they would there receive from older members would be of untold benefit to them.

The Board is composed of about thirty (30) members. Ten meetings have been held during the year, with an average attendance of about ten.

Among the subjects discussed were the following: "Fruit-Raising and Tree-Planting," "How can we Make our Meetings more Interesting?" "How can Farmers be Educated to Plant and Harvest their Crops at the Right Time?" "What are Union County Farmers Doing to Improve their Land and Business?"

* The Princeton Agricultural Association, in Mercer county, was organized in 1840. Its meetings are still regularly held, and it is an auxiliary of the Mercer County Board.—SECRETARY.

The meetings of the Board are held in the Court House, at Elizabeth, where we have a library of about one hundred volumes, besides pamphlets and State and government reports. The books contained in this library are works pertaining to the interests of the farm and garden, fruits and fruit trees, farm stock, poultry, flowers, architecture and landscape gardening, and other miscellaneous works. These books are loaned free to all members of the Board, and are the means of disseminating valuable information among them.

About the same interest has been shown in our meetings as in former years, and, although they have not been as interesting as they should have been, I think we can say that we have gained knowledge from them which could not have otherwise been obtained.

Our regular Farmers' Institute was held on March 1st, 1894, at Elizabeth, and was attended not only by farmers from Union county, but from other parts of the State.

The following is a programme of the day :

MORNING SESSION.

Words of Welcome.....By the President.
 Reading of minutes of previous meeting.....By the Secretary.
 Address—"Tomato Culture"..... By Theo. F. Baker, Bridgeton, N. J.
 Address—"Good Roads".....By James Owen, Essex County Road Engineer.

Dinner was provided by the Board, at the Sheridan House, for members and invited guests.

AFTERNOON SESSION.

Address—"Small Fruits".....Wm. H. Goldsmith, Lyons Farms, and
 E P Bebee, Elizabeth.
 Address—"Feeding Milch Cows"..... Prof E. B. Voorhees.
 Address—"New Jersey's Exhibit at the World's Fair".....Wm. R. Ward, Esq.,
 Lyons Farms, N. J.

The addresses were followed by discussions, which we think is the best way to disseminate knowledge at our meetings.

The attendance at the morning session numbered forty, and at the afternoon session, fifty-five.

The addresses were all interesting and instructive, and with the exception of the attendance, which was not as large as expected, the meeting was a good one.

The past season, like the one preceding it, has not been very profitable to the farmers of our county. The fine weather of the spring

afforded ample opportunity for planting the crops in good condition, but the exceedingly dry summer so retarded their growth and maturity that many yielded hardly 50 per cent. of a full crop. Then, too, the very low prices for all kinds of farm produce which have prevailed helped to make worse the deficiency in the farmers' receipts. Competition with Europe and Canada is a very serious drawback to farming in this county. We would like to see the tariff so high on farm produce that the importation would be stopped in a measure, so as to give our own farmers a fair return for the labor expended. As it is now, there is no class of people who work harder for the money they receive than do the farmers, and often the cost of production is greater than the compensation received for the crops. Is it any wonder, then, that the boys leave the farm and go to the city, where greater opportunities are afforded for making money with less labor?

Agriculture to-day stands at the head of all industries of our country, there being more money invested in it than in any other business, and the country is more dependent upon it than on any other.

Is it not then just, and to the interest of our government, that it not only protect, but encourage this business in every possible way?

COUNTY ROADS.

This county was the pioneer in the building of what are now known as county roads, the present movement for bettering the country roads of the State having originated in this county, and the first of our county road laws was drafted and pushed through the Legislature by its citizens; so that the experience of Union has been in a measure the guide to other counties about to inaugurate a system of improved roads, and also to further State legislation.

Our county adopted a system of roads radiating from the county seat, Elizabeth, to the various points in the county, with certain cross-roads connecting the main roads. Of these some forty or more miles have been built of Telford, and at a cost of from \$7,000 to \$10,000 per mile. The roads have been very substantially built, and if kept in proper repair will stand an unlimited amount of heavy travel.

At the outset there was opposition more or less pronounced to bonding the county, which before had been practically free from debt, for building roads, as well as to spending money so lavishly for an experiment, as it was deemed. As time proves the value of our

county-built highways this opposition is dying out, and few can be found who are not ready to admit that our solid roads have been of great value to the county. The tax assessed on property for these roads amounts to about four cents on each \$100—a burden scarcely felt by the community.

The county has now spent for roads to the full limit allowed by law—\$350,000—and the sentiment among our more thoughtful farmers is that as now hardly an acre of our county is more than a mile or two from a solid road, the county has nearly done its duty as to providing roads, and that the remaining roads, the feeders to the county roads, shall be taken care of by the townships.

These minor roads have been more or less neglected by the townships the past few years from a feeling that perhaps the county would adopt and build some of them.

A well-settled policy on the part of our Board of Freeholders as to which, if any, of these roads should be marked for future improvement, as circumstances allow, would encourage the townships to improve them.

One effect of solid roads has been that heavier loads are drawn and larger horses used. Ten years ago the average weight of our farm horses was about 1,000 pounds each, and an average load one ton. To-day our farm horses will weigh 1,300 pounds, and an ordinary two-horse load is two tons, while loads of three tons, and even more, are not at all uncommon. The county roads will easily stand such loads, but they are ruinous to the dirt and gravel roads. Already the common roads show signs of serious wear and tear, and this necessary consequence of our county-road system demands careful consideration.

BICYCLES.

The enormous strides the use of the bicycle has made in popular esteem is another outgrowth, in large part, of the county-road system. No figures are at hand, but the number of bicycles owned in this county alone must be many thousands. The wheelmen have been among the most enthusiastic supporters of the sentiment for county roads, and although they have the use, almost the monopoly at times, of the roads, and the full protection of the law in their rights on the highway—for the bicycle is no longer regarded as a plaything, but by decision of the courts a vehicle, and entitled to the same privi-

leges and right of way—it is believed that not one per cent. of the wheels are ever represented on the Assessors' books.

It is suggested that this large and increasing amount of personal property now not taxed should pay its share toward the support of the county, and that this could best be accomplished by a uniform assessment of say \$1 per year for each bicycle, the money so collected to be expended for repairs to the county roads.

Certainly no fair-minded person could object to such a tax, and it would answer the question of how to reach this class of property, that is gradually assuming more and more importance.

CROP REPORT.

The farmers of Union county are largely engaged in producing garden truck and milk, which is nearly all taken to market by themselves, very little, if any, being shipped. The crops of the past year do not furnish us with a very encouraging report. The very dry summer was the cause of reducing the summer crops about one-half, but the heavy rains in September, and later, caused the late crops to yield very satisfactorily. Potatoes are a crop largely grown and upon which our farmers depend a great deal. They came up well and would have given a good yield, had the weather been favorable, but as it was, they only yielded about 50 per cent.

Tomatoes grown in the county are usually of good size and quality and are sought after by consumers, consequently they bring a better price, both for the nearby markets and for the canning factory, which is situated near Elizabeth. The yield was about 75 per cent. of a full crop, and the price paid at the factory was \$9 a ton; at the stores, 20 to 50 cents a basket. Sweet corn, Lima beans, cucumbers, squashes and other garden truck gave a poor yield and prices were much lower than last year.

Fruits of all kinds yielded about 75 per cent. and brought a low price. The very late crops such as cabbage, turnips and carrots, yielded well, but prices were exceedingly low—carrots \$1 per barrel, cabbage \$1.50 to \$4 per hundred, Russia turnips \$1 per barrel.

MILK-RAISING.

Dairy cows are the most profitable stock kept in the county. Very few of these are raised on the farms, but are purchased from dealers who buy either in Pennsylvania or in Buffalo, N. Y. The

price paid by farmers for good cows is from \$40 to \$60 per head. There are no creameries in our county. The farmers can get more for their milk than creameries could afford to pay. Much of the milk is sold to retailers or wholesalers, who drive to the farms for it. The price paid by retailers is from 3 to 4 cents per quart; by wholesalers from $2\frac{1}{4}$ to $3\frac{1}{4}$ cents per quart. Some of the farmers retail their own milk in the cities and towns for from 6 to 8 cents per quart.

Milk-producing is not very profitable at the prices paid by wholesalers, but it furnishes a steady income and is one of the best ways to fertilize our farms.

Farm land in this county is worth from \$150 to \$400 an acre and the farms are mostly small, hence it does not pay well to raise hay and grain. There is, however, a small quantity raised, which is mostly fed to stock on the farms where it is raised.

Although the past year has not fulfilled our expectations as regards crops and prices, we are hopeful that next year will not only find our county in a better condition financially, but will be a more profitable one for farmers.

WARREN COUNTY.

OFFICERS FOR 1895.

<i>President</i>	JOHN T. OBERLY.....	Broadway.
<i>Vice President</i>	WM. G. DUFFORD.....	Washington.
<i>Secretary</i>	BYRON R. CLIFFORD.....	Delaware Station.
<i>Treasurer</i>	OWEN OBERLY.....	Stewartsville.

DIRECTORS.

WM. O. WARD.....	Hainesburg.
E. L. ORT.....	Port Murray.
JOHN R. HARTUNG.....	Delaware Station.
WM. M. SIMANTON.....	Aebury.
HENRY T. MILLER.....	Harmony.
WM. MILLER.....	Montana.
D. C. DONNELLY.....	Springtown.
WM. FRITTS.....	Washington.
LEVI KETTLE.....	Johnsonburg.

DELEGATES TO STATE BOARD.—John T. Oberly, Byron R. Clifford.

NOTE.—Among the meetings of an Institute character planned by the Secretary of the State Board was one at Washington, and it was his desire to have the Warren County Board, which had become inactive, re-organized. Notice of this meeting had been given both in the papers of the county and by hand-bills and printed programmes. Although the day was quite threatening the meeting was well attended, a number of ladies giving the encouragement of their co-operation by their presence. The following brief account of the meeting by the Secretary is given :

FARMERS' INSTITUTE.

Pursuant to a notice, quite a number of the prominent farmers of this county met in Beatty's Music Hall, Washington, and re-organized the County Board of Agriculture of Warren county.

Franklin Dye, Secretary of the State Board, called the meeting to order. Mr. William Fritts was appointed temporary chairman. After the various committees were appointed, Mr. C. E. Chapman was introduced, who proceeded to address those present on the "Culture of Farm Crops in General and Potatoes in Particular." He showed by charts the new methods employed in cultivation, commencing in the preparation of the ground, different ways of fertilizing, furrowing, preparation of seed, bed-planting, cultivation, digging and storing. The explanation was so very plain no one could help but understand. This address alone should have brought every potato-grower in Warren county, as the ideas here shown would have been of incalculable benefit.

After the opening of the afternoon session a motion was made and carried to proceed to re-organize, when the following officers were elected. (See list above.)

After the election, Mr. James Cheesman's address was in relation to what constitutes a dairy cow. He first showed how to select the calf, how to be fed, how to breed, the effects of inbreeding, the composition of milk, the effects of the different feeds on production of milk, also how to select a profitable cow.

There was also an address on "Poultry," by a practical poultry-keeper, showing that there are enormous profits in poultry where one has the knack or natural gift to handle and care for them. The illustrations in this class were very good.

The evening exercises were in charge of Professor Byron D. Halsted, Botanist. His subject was "The Fertilization of Plants." This was the most interesting (in a scientific view) of either lecture. The Professor showed, by the aid of magic-lantern illustrations, many times magnifying, the wonderful works of nature in the reproduction of vegetable life, also how much we are indebted to insect life for the distribution of pollen for the purpose of fertilization. Altogether this was one of the most entertaining and instructive meetings ever held in the interests of farmers in this county.

B. R. CLIFFORD,

Secretary.

CROP REPORT.

BY THE SECRETARY.

The winter of 1893-94 was variable; some intense cold, a great amount of open, disagreeable weather, with some badly-drifting snows; one falling on the twelfth of April blocked many roads for several days.

The winter grain came through the winter in a fair condition.

Oats were sown in reasonable time, but on account of the great drouth were not more than half the usual crop.

Corn was very much delayed in planting, and also in its cultivation, by an abundance of rain. The crop was nearly ruined by the great summer drouth; a large part of the county (which is noted for its crops of corn and wheat) was nearly a total failure.

Potatoes suffered in nearly the same proportion, many failing entirely. It was noticed that those who plowed and manured in the fall suffered much less than those who plowed in the spring; also, that a reasonable amount of phosphate was a great benefit, forcing a large growth before the drouth took effect.

The melon crop, especially the nutmegs, was a full crop, being very large and of fine flavor.

Berries were a medium crop, strawberries suffering severely towards the last of the season on account of drouth.

The hay crop was a good one, somewhat above the average, and was harvested in good condition.

The wheat and rye harvest not up to the average, being estimated at 75 per cent. for the county.

The milk industry, especially in the upper part, is assuming large proportions, those who have adopted it being much more successful than those who follow grain-raising exclusively. Two new creameries have been put in operation the past year.

Early peaches brought a good price, while later ones hardly paid expenses. The trees being overloaded produced an inferior fruit, therefore a low price.

The apple crop was an immense one, the largest in many years, and on account of failure in other parts of the country brought a fair price. Without this crop many farmers would have suffered a serious loss, especially tenant farmers who pay money rent.

There was about the usual acreage of winter grain sown, and it went into winter quarters fully up to average condition.

The poultry industry is a large and paying one, and is on the increase.

Many are raising pork with fair success.

The sheep industry is about destroyed, as much on account of dogs as the low price of wool and mutton. There should be something done to destroy the large number of worthless curs that are roaming through the country.

A large number of our dairymen have adopted dehorning, and all are well pleased with the experiment. Many claim they save a large amount in feed, and also increase the milk product. There are but few dairies but are dehorned. My experience with dehorning has been more than satisfactory.

This winter has been very severe so far, and there are grave fears in regard to the winter grain, there being a heavy coat of ice next the ground covered by a heavy fall of snow.

AGRICULTURAL EXHIBITS

AT THE

COLUMBIAN WORLD'S FAIR.

BY HON. W. J. BUCHANAN, CHIEF OF AGRICULTURAL
DIVISION.

Delivered at the Annual Meeting of the State Board of Agriculture,
January, 1894.

AGRICULTURAL EXHIBITS AT THE COLUMBIAN WORLD'S FAIR.

In the United States there are more than six million farms, and on these one-half our population live. From them come 76 per cent. of the \$800,000,000 that represent our annual export trade. You see from this how important a part agriculture plays in our national commerce. The farm plays a more prominent part still in furnishing many of the successful men engaged in manufacturing and commercial enterprises. Mr. Armour, the great packer, was once asked by the Governor of a Western State, as they stood looking down on the five hundred men in the Produce Exchange, "How many of these five hundred men do you suppose came from the farm?" Mr. Armour replied, "Eighty out of one hundred." This is probably a correct estimate, and if you will go over the list of prominent men who have had to do with the development of our country, you will be surprised to find how large a number were farmers' boys, brought up in comparatively poor circumstances. Their experience as farmers' boys taught them to be self-reliant, observing, courageous, calculating and manly. These traits, joined to a good, healthy body and a wholesome, honorable mind, were the elements that made their after-life certainly successful.

I have been asked to tell you to-night something of the part taken in the great Exposition recently closed, by the farmer, the farmer's boy, and by agriculture in its broad sense. In what I shall say I will include live stock and forestry in agriculture; although both were distinct departments of the Exposition, they were directed by my office in connection with the Department of Agriculture. My remarks will of necessity be fragmentary and somewhat disconnected, as I propose talking to you in a plain, every-day way, about some of the prominent things.

I want to tell you something of that part of the Exposition found in the Agricultural, Forestry, Dairy and Live Stock buildings,

where the exhibits came from, what they represented, and some conclusions drawn from them. I want it understood between us in the beginning that this is not a lecture, nor an address, but simply a family conversation, with one person doing all the talking.

Agriculture, simply defined, is the science or art of cultivating the soil so that a given quantity of land shall produce useful vegetation of the greatest quantity, the best quality and at the least expense. This definition, however, does not fit the word when applied to an Exposition—there it means everything crude and manufactured that goes on the table for food or drink, the machinery necessary to plant, cultivate, harvest and prepare for market the crops of the world, and the fibers, both vegetable and animal. If you will try to go over in your mind the list of things suggesting themselves as embraced in the above Exposition definition of the word, you will find it extensive, appetizing, the opposite of prohibition, and of a scope to make pursuit impossible.

The Agricultural building occupied a point of ground on the edge of the lake 500 by 800 feet, with an annex 300 by 556 feet. It was the southern front of the Court of Honor and adjoined the southern end of the Peristyle destroyed by fire last week. Its floors covered over thirteen and one-half acres of space. It had a number of galleries so constructed as to make in reality a second floor; on this floor all manufactured food products except meats were shown. The building cost \$668,000, and was by common consent declared the most beautiful on the grounds.

The impression that the exhibits in the Agricultural building would be found uninteresting, composed of wheat, rye, corn, pumpkins, grasses, &c, was undoubtedly brought to the Exposition by a great number of visitors. It is certain this opinion was instantly changed on stepping inside the great building.

Let us see for a few minutes what we would find and through what countries we could travel in a trip through the building; starting at the west main entrance you are placed among the quaint packages of tea, the queer boxes of rice, the dainty pots of preserves, the tantalizing condiments, bottles upon bottles of the native beverage, "Saki," and the wonderful table delicacies of Japan, the land of Jiarikshas, fans and chrysanthemums. Step across the aisle and you are under the flag of the Czar of all the Russias, and you can in imagination hear the sleigh-bells and see the Cossack with his long-skirted coat, fur

cap and high boots. Before you lies the natural and manufactured food products of that great empire, thousands of samples of grain—rye predominating, of which it produces more than any other country in the world, seven hundred million bushels each year; hundreds of odd-shaped bottles, with undecipherable labels, containing rum, cordials, bitters, and the far-famed "Vodka," the national liquor; cotton from Turkestan and the Caucasus, flax, beet-root sugar, the famous Russian cigarettes, and among hundreds of other interesting things, a splendid exhibit made by order of the Czar, showing the work of their agricultural colleges and schools.

Across another aisle and you are under the tri-color of France. Here your mind takes you to Paris; you think of peasants and pictures, and easily understand how fascinating it all can be as you see around you a wilderness of dainties, sweetmeats, chocolates, liquors, preserves, and all the toothsome delicacies that rise up to disturb your simple meal for weeks afterwards; with these, showing the versatility and thoroughness of the French mind, a most comprehensive and excellent exhibit of their crops and the work of their agricultural schools.

Now we go direct to India, the land of elephants, jungles and white turbans. In a reproduction in teakwood of an ancient, buried, stone temple, you are among the tea and spices of far Ceylon, and *such* tea, some of it valued at \$125 per pound; here you find in addition, sugar, rice and other tropical products, and chattering about you twenty native Singalese, serving tea.

Joining Ceylon, New South Wales rivets your attention with her enormous wool exhibit. Did you know that in that land of beautiful meadows, kangaroos and bushmen, seventy million sheep yield up their fleeces each year to keep the spindles going in a dozen European countries?

From New South Wales, strange as it sounds, a walk of five minutes will take you through the Cape of Good Hope, with its ostrich plumes, fleeces of mohair, and elephants' tusks; Algiers, with its Moorish lanterns and Moorish everything else; quaint Holland, the land of windmills, canals, wooden shoes and butter—do you know they export one hundred and fifteen million pounds of that product each year?—with its fine exhibit of gin and chocolate, I hardly know which is the more famous; Sweden, with its cheese, rennet extracts and canned fish; Denmark, with its dairy machinery, for which it is

famous throughout the world—its liquors and beers ; far-off Uruguay, with its wools, wheat, wines, skins of wild animals and curios. Here is a good place to rest a moment and while looking at the immense collection of skins, enjoy a cup of beef tea at Liebig's exhibit, one of the outposts on the famous lunch route. You may not know that in the Agricultural building, the initiated visitor fairly reveled in a continuous Delmonico lunch, free of expense, with just enough walk to whet the appetite by going from one exhibit to another on the second floor, getting sample dishes of oatmeal and cream, soup of any kind, biscuits and Jersey butter, beef tea, milk, pickles, beer, jellies, and wind up with a Spanish cigar or Russian or Turkish cigarette.

After your cup of beef tea, you start west from the south temperate zone and first pass through the exhibit of our great big neighbor in the north temperate zone, Canada, where, amid 100 cheeses you see that famous one weighing 2,600 pounds. Do you know what that means? It is a cheese six feet thick and nine feet in diameter. You are inclined to linger here, for no more beautiful exhibit was to be found on the grounds than the exhibit of Ontario, Quebec, and the Northwest Territories filled with the myriad products of that great sweep of country, which always associates itself in my mind with snow-shoes and furs.

Walking west you are at once under the flag of that country on which the sun never sets ; here a wealth of table luxuries tempts you on every side. Continuing west, the solid appearance of things, the beautiful decorations and the 36,000 pound chocolate statue of Germania rising before you, reminds you instantly that you are under the colors of the Fatherland ; here, amid a wealth of hops, beers, mineral waters, sugar, brewing machinery and the salts of the great buried phosphate forest, you would not be surprised to hear the sword-clank of a broad-chested cavalryman or the "Wacht am Rhine" from a military band.

A little farther on you see the flag of the southernmost republic on the globe, far Argentine ; here hundreds of hides, great bales of wool, of which it exports 266,000,000 pounds each year, thousands of samples of grain and grasses attest the wonderful richness of that immense country. Near it Paraguay, with its tea, logwood, tanning woods, tobacco, grain and a famous collection of medicinal plants and barks.

Just beyond this, sheltered by a quaint corral on which are

fastened hundreds of assegais, swords, knives, spears and other implements of amusement that make the flesh creep, are displayed the rice, spices and coffees of Johore.

Directly north of Johore, by a severe wrench to geography, lies another South American republic, Ecuador, with its curious exhibit of wines, ancient pottery, cocoa and coffee.

Cross another aisle, and you are in the land of the Montezumas, the home of the bull-fight and the sombrero—delightful, romantic Mexico. All about you are evidences of the wonderful advancement made by that delightful country in every branch of agriculture; on every side you see coffee, all the grains common to our country, sugar, cheese, tobacco, cotton, silk, and case after case of their famous brandies and liquors.

Crossing another aisle, you are in a country that has had a checkered career, remote Liberia, one of the Black Republics. Here you stand under a flag that is the bane of white politicians, as their laws prohibit a white man from either owning property or holding office. The exhibit was most interesting, as it illustrated not only the resources of the country from wheat to lion skins, but the life of the natives, models of their homes, their implements of warfare and of peace.

Near this, British Guiana, the abiding-place of the famous Kauteur Falls, 700 feet high; the country in which 100 inches of rain falls annually. Here you will linger to look at the thousands of brilliantly-plumaged birds, the dozens of kinds of monkeys and rare animals that live in its dense, tropical woods, its gold, and the sugar for which it is famous. Surrounding the exhibit, we see twenty-three trunks of native timbers, brought at great expense to show visitors what wonderful woods grow there; among these is the greenheart, the most lasting wood known in naval work. By the way, this timber was alone used in building the great locks on the new Manchester canal, and is greatly prized for constructing vessels going into the Arctic sea.

Traveling on, you find another tropical country, Trinidad; one of the richest spots of earth on the globe. It is an island, about 36 miles wide and 50 miles long, from which comes almost all the asphalt used in the world; and, with only one-half of the island under cultivation, produces for export, yearly, \$10,000,000 worth of sugar, rum, molasses, cotton, cocoa, fibers, timber and asphalt.

A few feet farther, and you are in the Republic of Brazil—that enormous country full of so much history and legend, recalling the pictures in your geographies, the travels of Humboldt, the Amazon and the Andes. Here are bark huts, showing how the natives live, every grain common to tropical, sub-tropical and temperate climates, bags upon bags of different coffees, tea, tobacco, cotton, rice, rubber, liquors, starch, sugar, rum, molasses and innumerable other things of interest.

Across another aisle, passing through Austria, with its beers and mineral waters, you are in the land that recalls gypsies, guitars and mantillas—the country that gave to civilization this New World. With Spain you find Cuba, and amid a bewildering display of liquors, fibers, olive oil, cigars and cigarettes, you could easily dream of Spanish dons and beautiful señoritas, of Ferdinand and Isabella, and the man in whose honor all the great show was made.

Leisurely stroll south and finish your trip through the Old World by visiting first the land of olive oil, maccaroni and gondolas. Here you find the famous Italian olive oil exhibited in dozens of attractive ways, pastes by the hundred, and a maze of sweetmeats and liquors. After passing through Switzerland (always connected in my mind with nightmares, where you hang on tiny bushes over the edge of Alpine chasms), with its exhibits of condensed milk and cream, then the Orange Free State, with its wool, ostrich feathers, tobacco, mohair and springboks, you stop at the oldest civilized nation—historic Greece. Its glories have faded, and the modest exhibit of cigarettes, for which they are gaining fame, and raw silk, seems out of place as you think of the time its people ruled the world.

Here is an excellent time in the trip to go upstairs and enjoy one of the famous agricultural free lunches before we go through the balance of the building. You can pick out at the beautiful exhibits your favorite soup, have warm biscuits or bread with the sweetest butter imaginable, dainty dishes of oatmeal, cracked wheat or any other suggested cereal, with rich cream; get any kind of a pickle you can name; have a plate of buckwheat cakes and maple syrup; get all the milk you can drink; have a cup of chocolate, with a lot thrown in to eat; samples of more different kinds of crackers than you could dream of in delirium; get a glass of cold beer, sample glasses of fifty kinds of mineral waters, and during all this time pass among the most beautiful exhibits of manufactured food products

ever made ; many of them familiar friends, whose catchy " ads " have been your constant companions in your daily paper, the elevated car and theater programme. You are waited on by lovely young ladies, your lunch served on the daintiest china and eaten with silver spoons and forks. If a man, you can finish by getting a Turkish cigarette and go outside (you cannot smoke inside), and, as the boy says, " find an easy place to rest." If a lady, you probably have 500 pounds of catalogues, cook-books and picture cards with you, so that a cheerful place to rest in will be a settee at the center of the building, where you can watch the crowds about you dragging themselves and their picture cards around like lost souls. After a half hour's rest, we will go downstairs and start through the south half of the big building. Here the Stars and Stripes float over the crop exhibits of thirty-nine States.

What a wonderful picture is presented in the decorations of the different State pavilions ! To one who has not seen the striking effects produced by the artistic use of grain and grasses in decoration, it is impossible to describe the many beautiful things seen as we pass through. Here is where the farmer and his boy insinuate themselves into our affection by their work, and from the immensity of the exhibit you are inclined to disagree with the Western orator who said, " There were many places in this country that the foot of man had never trod and the eye of God had never seen." The extent of the State exhibits may be judged when I say that one State had 800 exhibits of grains and grasses. If you take an interest in any variety, you can by copying the information furnished by exhibitors from each State or country producing it, have its history and be able to tell where it thrives best. This could be done, as each exhibit was accompanied by information covering the same points—name, when planted, soil, how cultivated, when harvested, &c.

Do you know that in a great many ways we are ahead of the world in agriculture ? We raise more wheat, more corn, more tobacco, more oats, produce more butter, pack more meat, have more cattle, hogs, horses, and whiskey, and produce more fruit than any other nation on the globe. With some of these, strange bits of history are connected ; for instance, let us stop a moment in Michigan's pavilion. Do you know that a large part of the celery used in our country comes from this State ? Fifteen years ago a family of foreigners moved to Kalamazoo and began raising celery ; to-day there are 2,000

men engaged there in that industry, and during the season 50 tons are daily shipped to all parts of the country. The State has another claim to your attention, and from a quarter you probably know little of. The farmers of this State plant each year about 12,000 acres of peppermint to be distilled and exported abroad.

Pennsylvania's pavilion, brilliant in color, with the State seal wonderfully made in grains, filled with the varied products of that famous State, reminds us that in their State building was to be seen the charter given to Penn for 46,000 square miles of land by King Charles II., the consideration being one-fifth of the silver and gold found and two beaver skins annually.

Now let us stop in the gorgeously-decorated Iowa pavilion. Noticing the yellow corn on every side, we remember that fifty years ago the South was the great corn belt of this country, the State of Tennessee being the corn State of the Union. To-day the South is not known as a corn country at all, while the West has sprung into its place, with the State of Iowa as the first corn State of the Union, with its yearly average production of about 300,000,000 bushels. To show you how mistaken people are occasionally, let me say that at one time the people of the State had an idea it would be the great wheat State of the Union, but they found in a little while they were mistaken and that to make a success they must turn their attention to the things the State would produce best; this they did, with the result that to-day it produces more corn, butter, hogs, cattle and hay than any other State in the Union.

Passing through the Illinois pavilion I am reminded that in the Dairy building the first milk can shipped into Chicago was exhibited. This was in February, 1852. Now there are shipped each day into that city 8,000 cans of eight gallons each. No wonder it grows!

As we stop in the beautiful pavilion containing the exhibit from the State of Colorado, do we realize that it was admitted into the Union less than twenty years ago, and that it was then known—with its Leadville and Denver—as a mining State? To-day the value of its agricultural products exceeds in money the product of its mines. Here we find exhibited wheat averaging 53 bushels to the acre and 62 pounds to the bushel from a tract of over 800 acres.

In addition to the exhibit from this State, we find on our trip valuable lessons of the wonders done by irrigation in the exhibits from Utah, California and Nevada—the great size of the vegetables

shown and the wonderful yield fairly staggering us. It may interest you to know that one cubic foot of water passing through a gate in one of the big irrigating canals will irrigate about 55 acres, and that from this supply you can produce on an average 40 to 50 bushels of wheat, 150 bushels of potatoes and three crops of alfalfa of four to six tons to the acre. The cost of water for this purpose varies in different States and countries, for you must know irrigation is practiced throughout the world. In Colorado, the cost averages about \$2 per acre yearly rent. Think of the difference in rainfall between the irrigation States, which average about seven and one-half inches yearly, and Trinidad with 80 inches, or British Guiana with 100 inches yearly. I am inclined to think that in these tropical countries where six and eight feet of water fall each year it would be more difficult to get back a loaned umbrella than here.

In walking through the pavilions of the 38 States, we find in each something of intense interest and of exceeding value to add to our little mental encyclopedia. Leaving them, at our right we find a maze of machinery—all life and motion. Here are the machines used throughout the world to plant, cultivate, harvest and prepare for market the field crops of the world. In this line of manufacture America leads the world. Here are side by side the most magnificent binders, reapers and harvesters you have ever seen, their wonderful mechanism taking grass and twine and tying as perfect a knot as you can, with amazing rapidity, and old types of machines which have had their day and are now relics of an interesting and historic mechanical past. Among these we see a collection of plows from every country of the world, the first reaper made, the first harvester made, and original patents bearing President Jackson's signature for machines that to-day cause one to smile and wonder how it was possible for anyone to believe they would ever amount to anything.

You have now a vague idea of what there was to be seen in the Agricultural building, and can continue your trip alone through the remainder of the exhibit. Passing south of the building you come upon as romantic a picture as could be found in the world, thirty-eight windmills of every conceivable form, from the old sail-mill sent from Holland to the newest contrivance with ball-bearing joints. It is like a page from "Don Quixote" to see them all whirling in seeming frenzy over the beautiful and picturesque towers and houses constructed by the different manufacturers.

Continuing south you come to the Dairy building, filled with butter from sixteen States, fashioned into flowers, cabins, farmyards, letters and odd shapes. Farther on you reach the Forestry building, built without a nail being used in its interior construction, surrounded with a colonnade, the posts of which are 270 tree trunks furnished by twenty-three States and three foreign countries. They cover 104 varieties of the prominent timber trees of North America. Inside sixteen foreign countries and twenty-five States have exhibits of wood which were so interesting and attractive that they will long be remembered by the visitor. I had no idea wood could be so attractive to grown people, remembering as a boy how little affection I had for it in the wood-pile. This reminds me that in the center of the building a trophy of woods was collected, which had several interesting features—one was a half section of a giant redwood tree. I had botanists make a careful computation, and at a point from the circumference, indicating 400 years' growth, I had placed a brass point, and above it a card explaining the age of the tree. According to the computation made the tree was 552 years old at the time Columbus discovered this country. Another, was two enormous fishing poles from Japan, each of them as straight as could be imagined. They were about five inches in diameter at the butt and seventy-two feet in length. Another, and perhaps the one thing looked at with more interest than anything else in the entire building, was Gladstone's axe. This was sent by Mr. Gladstone's son, Herbert, and had with it the certifications of the American Minister and Consul-General, and the express labels and receipts showing its identity. It was the axe used by the famous Prime Minister on his Hawarden estate. We were obliged to keep it in a heavy box with a glass front and have it taken to the office each night for safe keeping. The axe will remain in this country, and it is proposed to use it as the nucleus of a fund for the founding of a Chair in Forestry in one of our American Universities.

You find in the building bamboo from Japan, oak from a dozen States, giant redwood from California, hemlock from Oregon and Washington, and from Brazil and other South American countries hundreds of specimens of the rare woods of their great forests. You may not know that in South America great numbers of the woods are so solid and heavy that they will not float, and to get them to the

seaboard or mills it is necessary to use barges or rafts made of lighter woods.

Another thing you find in the building is the exhibit of Mr. Geo. W. Vanderbilt, of New York, who is applying scientific forestry to Biltmore Forest, his great estate in North Carolina, and, strange as it may sound, his is the first effort in this country to do this. In Germany care has been taken of the forests for hundreds of years, a person cutting a tree being required to plant one. Here we have denuded our hills and shamefully wasted our timber, until now we are facing the fact that we must begin to build up our forests or become a country depending on others for this necessary product.

Now, retrace your steps and see the live stock. You can walk through stables which will hold 2,000 horses or cattle. If your trip was in September, these were what you found; if October, you found the barns filled with sheep, swine and poultry.

It is impossible to tell in a few minutes anything of the magnificent animals on exhibition. The Exposition paid \$150,000 in premiums on the exhibit, and it attracted the best animals from Russia, sent by the Grand Duke; from Germany, sent by the government; from Canada, and from every State in the Union; the result being the largest and best exhibit of its kind ever seen in the world.

I have told you imperfectly of some of the things you could have seen in the departments of which I had the honor to direct and mould their displays. Do not, however, imagine that this magnificent exhibit we have seen was due alone to the work of the farmer. It illustrated forcibly the fact that each of us depends on the other for help, and that alone we can accomplish but little; without the designer, the artist and the skilled mechanic, the products of our schools, colleges and splendid institutions, like the Cooper Institute, the farmer's work would have been in vain, and the magnificent results attained by the combination of interests impossible. Now let me tell you of some conclusions which present themselves to me.

I am impressed, by my recollection of the exhibits and observation of visitors, with the belief that the farmer is to be envied above men. I mean by the word "farmer," in what I shall say, the intelligent, studious, progressive man who owns his own farm. He is least affected by commercial depression of any element of our population. He has this advantage at all times over the artisan, no matter how skilled he may be: the artisan during a period of commercial

paralysis feels the effect at once, and when his pay stops is cut off from his only method of providing for his family; under like conditions, the farmer has the same means of living he had in prosperous times—land, horses and seed. He may have to pinch to pay his taxes, and may be obliged to dispense with many things, but he can, by working a trifle harder (as the artisan would gladly do), come very near keeping the balance even. He lives a healthy, contented, quiet life, deserves all he gets, because he works like a beaver, and is more certain to succeed if he applies good business methods to his work than the average man in any other calling. No poverty exists, nor can exist, on the farms of our country that remotely resembles the great destitution in large cities; there is always a market, although the price may be low, for the products of his labor, and that is more than can be said for labor in any other direction. He stands as the backbone of our commercial and national success, and is respected and honored by every true thinking man or woman.

What of the farmer's boy? Well, let me tell you: I was a farmer's boy and did all the hard work which falls by foreordination, I suppose, to all farmer's boys. I have stood right behind the threshing machine, and had my eyes and skin filled with beards and dust, just because some big, lazy man patted me on the back and told me what a worker I was. I have tramped hay in the mow and found all the thorns with my bare feet and all the nails in the roof with my bare head. I have cut wood early and late; milked the cows, after routing them up on frosty mornings so I could stand in the warm spot where they had slept, and I am sure it all did me good. I was healthy, and the rugged training, looked at from my present point of view, was a blessing—I did not have the same opinion, however, at that time. I would not exchange the recollection of my boyhood, with its days in the woods with dog and gun, its coon hunts at night, its sleigh-rides to the district spelling school, its "huskings" and "apple peelings," where you always managed to get near the girl you were sure you would marry some day—and, by the way, you always married someone else—the visions of sugar-making, the old-fashioned school and the yearly trip to the circus, for the boyhood of any city-bred youngster.

I can look back upon that time and sympathize with that delightful story-teller and writer, Eugene Field, who speaking from his heart says:

" I once knew all the birds that came
And nested in our orchard trees ;
For every flower I had a name—
My friends were woodchucks, toads and bees ;
I knew where thrived in yonder glen,
What plants would soothe a stone-bruised toe—
Oh, I was very learned then ;
But that was very long ago !

" I knew the spot upon the hill
Where checkerberries could be found,
I knew the rushes near the mill
Where pickerel lay that weighed a pound !
I knew the wood—the very tree—
Where lived the poaching, saucy crow,
And all the woods and crows knew me—
But that was very long ago.

" And pining for the joys of youth,
I tread the old familiar spot
Only to learn this solemn truth :
I have forgotten, am forgot.
Yet here's this youngster at my knee
Knows all the things I used to know ;
To think I once was wise as he—
But that was very long ago.

' I know it's folly to complain
Of whatsoe'er the Fates decree ;
Yet were not wishes all in vain,
I tell you what my wish should be ;
I'd wish to be a boy again,
Back with the friends I used to know ;
For I was, oh ! so happy then—
But that was very long ago ! "

You Are Viewing an Archived Copy from the New Jersey State Library

REPORT ON NEW JERSEY EXHIBIT.

BY EDWARD BURROUGH.

From the day the soil of New Jersey was first pressed by the feet of the Europeans in 1609, the State has occupied a prominent position in the agricultural development of the country, the first settlers being tillers of the soil. "Descendants of the Hollanders from New York and Long Island settled in Hudson, Bergen, Morris, Passaic, Somerset, Hunterdon, Sussex, Warren, Monmouth and Middlesex. Those of English parentage from Connecticut and Eastern Long Island settled in Essex, Morris, Union, Somerset, Hunterdon, Middlesex, Monmouth, Ocean, Burlington, Atlantic, Cape May and Cumberland. English settlers located in Salem, Gloucester, Camden, Burlington, Mercer and Union; Scotchmen settled in parts of Middlesex and Monmouth; Swedes made settlements in Salem and Gloucester; Norwegians in Hudson and Bergen; Welsh in Monmouth; Irish and Germans in Warren and Sussex. But all came to cultivate the soil.

"From such as these the State was built up. They were the pioneers, and when the struggle for liberty came they were united in the defense of the Colonies, proving their patriotism and valor at Trenton, Princeton, Elizabeth, Monmouth, Red Bank and elsewhere. But the loyalty and devotion of both the men and the women of New Jersey to the cause of freedom were perhaps more forcibly shown in the sacrifices they made to support the army of Washington, as it frequently crossed, fought on or encamped in the State."*

From such an ancestry it naturally followed that energy and enterprise were not lacking in the development of the facilities afforded by good transportation and the natural fertility of the soil; the location of the State rendered its settlement easy, and its agriculture always of a high standard, notwithstanding its diversity of soil and physical

* From New Jersey Hand Book, 1893.

features, and for centuries agriculture has been, and still continues to be, one of its leading industries; with the improved land in farms numbering 2,106,297 (according to the geological statistics), exceeding in value per acre those of any other State in the Union. The location of the great markets of the nation on both sides have constantly widened the field for increased production, notwithstanding "the old cereal crops are being reduced from year to year, while the dairy, fruit, market-gardening and horticultural branches are increasing. But the decreased acreage is producing quite as much and even more in some instances now than was grown on the larger area a few years ago. This is owing to the more intelligent management of the soil by our farmers. Scientific methods and intensive instead of extensive farming are crowding old-time methods of practice into disuse. The State Geological Survey, the State Agricultural College and State Experiment Station work, the State and County Boards of Agriculture and the State Grange have each contributed something to the elevation and advancement of the farmer and the farming interests, and the change is very marked.

"Acreage and product of the cereals are as follows :

Buckwheat.....	13,520 acres.	114,626 bushels.
Indian Corn.....	267,648 "	9,124,000 "
Oats.....	121,327 "	2,837,293 "
Rye.....	77,245 "	874,049 "
Wheat.....	121,570 "	1,823,382 "
Hay (about).....	500,000 "	625,000 tons.

Milch cows, oxen and other cattle are worth	\$8,497,994
Sheep and hogs are worth.....	2,172,668
Horses and mules are worth	9,745,847

"In poultry and egg production the State takes a leading place. In the horticultural or market-gardening, truck-farming and greenhouse branches the State is second to no other. Large areas that were once devoted to general agriculture have been cut up into small farms and plots, and are now devoted to the industries named. The products, and their moneyed value, taken from such reduced limits under intelligent management, are simply prodigious as compared with the usual returns of general agriculture.

"New Jersey is also a fruit State. Small fruits are a staple product, and New Jersey peaches are well known; one county alone realized from this crop over half a million dollars last year. The

REPORT ON NEW JERSEY EXHIBIT. 511

southern portion of the State, much of it once considered unproductive, is devoted to viticulture, a branch of horticulture, and the wine output of that section, chiefly Atlantic county and parts of Salem and Cumberland counties, is very large. In the vicinity of Egg Harbor City, Atlantic county, alone, over 100,000 gallons were manufactured in 1892.

“In commercial floriculture, New Jersey, situated as it is between the New York and Philadelphia city markets, makes the largest showing of any State in the Union in proportion to its size. Of florists’ establishments we have 366; owned and managed by women, 8; total square feet of glass, 3,703,554.

Total value of establishments.....	\$3,666,518 46
Total value of tools and implements.....	155,107 14
In these are propagated—	
Roses.....	1,808,014
Hardy plants.....	4,006,602
All other plants.....	12,912,114
Total.....	<u>22,726,730</u>
Plants sold, value.....	\$897,908 58
Cut flowers sold, value.....	1,288,478 56
Total value.....	<u>\$2,186,387 14</u>

“Of seed farms the State has 34, comprising an acreage of 6,272.

Total value of farms, implements and buildings.....	\$2,333,066 68
---	----------------

“Farms devoted to the nursery business number 145, with a total acreage of 5,465.

Total value of nurseries.....	\$1,712,464 75
Total capital invested.....	1,970,693 90

“The above are only a few facts gleaned from census and statistical reports. The immense fruit, dairy and poultry products are not touched.”*

The great advance in scientific methods of agriculture and horticulture has been achieved largely through the instrumentality of the State Board of Agriculture, an institution of practical farmers, sustained by the State, whose whole object is the advancement of the agricultural and horticultural interests of the State.

* From New Jersey Hand Book, 1893.

The State Board of Agriculture is organized as a representative body. The members of all agricultural and horticultural societies, farmers' clubs, granges of the Patrons of Husbandry and other agricultural associations constitute the membership. Its principal duties are investigating and recording whatever concerns the agricultural interests of New Jersey. "Its investigations include facts relating to the various soils of the State, their chemical and mechanical condition, their productiveness and susceptibility of improvement; the best natural or artificial fertilizers, their adaptability to crops; the best methods of rearing, improving and fattening stock, including the prevention and eradication of all forms of disease among them; 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 and forestry; the proper laying out of the 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 interests of farmers."*

A State with such varied and intense agricultural industries as those above briefly alluded to, should be found occupying advanced positions in exhibiting its products to the world; a position that the Commissioners duly recognized when, on June 15th, 1892, the New Jersey State Commission of the Columbian World's Fair Exposition requested the State Board of Agriculture to assume the work of collecting, setting up and maintaining a State exhibit of agricultural and horticultural products at the exposition. The lateness of the appointment prevented the gathering of such a display as the State is capable of showing if sufficient time were allowed to grow and prepare the same. The collection of exhibits represents what the State produces of such crops as were shown, under the usual and ordinary conditions and care. Nothing was grown or specially prepared for the World's Fair. The New Jersey agricultural exhibit embraced one hundred and seventy-eight varieties of white potatoes, which included all the valuable market varieties, which were shown in half-bushel lots; twenty-four varieties of field corn, shown on the ear, shelled, and on stalks fourteen feet eight inches in height—the size of the ear, quality of the grain, and yield per acre excelled all

* From New Jersey Hand Book, 1893.

others at the exposition ; fifteen varieties of wheat and rye, shown in the grain and straw, the latter ranging from seven feet to eight feet two inches in height, and wheat sheaves showing a growth of six feet ; five varieties of clover of various heights up to six feet three and a half inches, and timothy four feet high ; three varieties of buckwheat, with millet, Hungarian grass, sorghum, peas, beans, asparagus, broom corn, Kaffer corn, sweet corn, cotton, flaxseed, flax in straw and manipulated, silk cocoons and reeled silk, sugar cane, tobacco, jute, peanuts, walnuts, chestnuts, chinquapins, hazelnuts, butternuts, English walnuts, almonds, pecans, shellbarks, hickory-nuts, acorns, timothy, clover, herd, orchard, red top and many other field and garden seeds and products, embracing sweet potatoes, water-melons, pumpkins, squashes, egg-plants, cabbage, peppers, tomatoes, and a full line of vegetables in their several varieties and excellence, showing the capabilities of our soil and climate ; and fifteen samples of the soil itself taken from the different sections of the State and exhibited in glass tubes three feet in length, showing the surface and subsoils for that depth.

The grain and seeds were shown in glass jars and vases made specially for this purpose, and special varieties of vegetables in bouquet and other fancy baskets ; while the general display was made in a miniature market-boat, with sails set, trimmed with the lighter and more showy vegetables and fruits, and around which were arranged a promiscuous collection of all varieties, regulated to represent waves, thus making a veritable sea of products, that covered one-fourth of the space of the pavilion. Among these exhibits, nicely mounted and encased in an oak cabinet, were five charts, showing the seasonal and annual climatic conditions of the State for the year 1892. They were prepared by Lieutenant E. W. McGann, Director of the State Weather Service, for the State Board of Agriculture, expressly for this exhibit, and show clearly and in detail, by zones and curved lines, the curious and interesting facts concerning the meteorological phenomena, of which, considering the area, New Jersey has a greater diversity than any other State in the Union.

Another novel and interesting feature, and one that attracted great attention, was the revolving graphoscope, originated and developed by Edward Burrough, President of the State Board of Agriculture, as a means of showing, by photographs, in exact representation, farm views, farm homes and buildings, orchards, crops, &c. There were

over 140 of these, and they were seen through two double lenses, seven inches in diameter, which enlarge to a size that makes them both interesting and instructive. The cabinet is of native cherry, five feet in height, and was made by Henry Albright, a house-carpenter of Haddonfield, N. J. It contains about 160 pieces of wood, 125 of which have no square cut. The mechanism was designed and metal-work constructed by John W. Sidle, of Philadelphia, under the guidance of Mr. Burrough.

The space assigned to New Jersey in the Agricultural building was south of middle aisle, near entrance, Sections C, H, 4.

The exhibits were shown in a handsome pavilion, "80 feet long, 24 feet wide and 20 feet high. It was designed by Erastus D. Allen, a native of Dover, Morris county. President Burrough made some alterations on accepting the design, substituting glass columns and terra-cotta bases instead of staff, and also the figure of the minute-man of 1776 and the farmer of 1893. The minute-men of 1776 were the farmers of that period.

"Washington, in his correspondence with the President of the Continental Congress, said: 'They flew to arms universally, and acted with a spirit equal to anything I have seen during the war. Too much praise, indeed, cannot be given to the people of the State for the patience with which most of them bore their exactions, and the patriotism with which many of them administered to the wants of their countrymen.' President Burrough adds: 'When the campaigns for which they were called out were over they returned home, set the musket in the chimney-corner, and plowed and tilled the soil and raised the crops that kept the army from disbanding during the memorable winter of 1780.'"

The form and style of the pavilion was an arcade, the arches of which were supported by glass columns filled with cereals and seeds, producing the effect of granite and marble, supported by terra-cotta bases. Over the four entrances was the coat-of-arms of the State, made of grain, surrounded by grain-work decorations; above the arches was staff work tastefully ornamented, which presented a light and attractive appearance that was much admired. On the inside, over the two side entrances, were paintings of Washington crossing the Delaware and the death of General Mercer on Princeton field, in which the figures were nearly life size. Over the two end entrances

* From New Jersey Hand Book, 1893.

You Are Viewing an Archived Copy from the New Jersey State Library



**View of Pagoda in New Jersey Agricultural Pavilion.
Built by the Ladies' Naturalist Field Club, of Woodstown, Salem County.**

was the beginning of agriculture in the State, with the Indian lamenting the advent of the white man, and a scene representing the progress of civilization from Columbus' discovery to the Columbian Exposition. Along the sides were four paintings, representing Mollie Pitcher on the field of Monmouth, final charge of the Americans, Fort Mifflin and Washington's headquarters at Morristown. Interesting exhibits of products, grown upon those Revolutionary battlefields, were assigned a separate space and neatly marked, while overhead, reaching nearly all the way across, was a sign bearing the following words, "New Jersey was the battle-path of the Revolution, and on whose blood-stained soil many of these exhibits were grown." The entire floor space was covered by a handsome linoleum, made and contributed especially for the purpose by the Nairn Linoleum Co., of Kearny, N. J., that being the only pavilion whose floor space was protected by a covering.

The materials of which the pavilion was constructed were mostly procured and manufactured in the State.

The terra-cotta bases for the columns were made and contributed by the Perth Amboy Terra Cotta Co., of Perth Amboy, N. J.

The glass columns were made and donated by Hires & Co., Limited, of the celebrated Quinton Window Glass Factories, of Quinton, Salem county, N. J.

The paint and oil were contributed by the Gibbsboro Paint Works, located at Gibbsboro, Camden Co., N. J.

The evergreens, plants and flowers that adorned the exhibit were donated by C. Ribsam & Sons, nurserymen, florists and dealers of Trenton, and S. C. De Cou, of Moorestown, N. J.

The ancient agricultural implements, embracing a wooden plow, wheat and rye sickles, grain cradles, flax break, saddle bags, &c., all with their history plainly exhibited with them, made an interesting display.

The quality, variety and general excellence of the exhibits displayed in the Agricultural Pavilion, excited great attention and were closely and critically examined by the representatives of foreign nations

The handsomest, most artistic and attractive display was that of native and ornamental grasses, contributed by the ladies, and which deservedly occupied the center of the pavilion, serving a twofold purpose as Superintendent's office and central ornament. The design was that of "a summer-house constructed after the manner of a Chinese pagoda.

(See illustration.) All the material of which it was constructed and ornamented grew in the State. It was octagon in form, nine feet square, twelve feet high, the rafters rising in the center to a height of three feet; these were decorated with pine cones, and the whole surmounted by a large bunch of cultivated grass (*Eulalia*), &c. The frame was built and contributed by Charles B. Coles, lumber manufacturer, Camden, N. J. The structure was made of native white cedar poles, which were neatly and artistically decorated with grasses, cattails, cornstalks, acorns, walnuts, hickorynuts, chestnuts, gum-balls and honey locust beans and thorns. The four entrances were hung with curtains made of cotton-grass (*Eriphorum*) and a lichen, popularly known as tree-moss or 'Old Man's Beard.' The grass and moss were sewed to a foundation of netting. These curtains were draped back with acorns and 'Job's Tears,' and hung on corn-stalk poles and acorn rings. There were also lambrequins of 'Job's Tears' and larch cones. At appropriate places on the frame are bouquets of native field and forage grasses correctly named. The structure was the handiwork of the Ladies' Naturalist Field Club, of Woodstown, Salem county. The club is composed of farmers' daughters, whose interest in the welfare of the State induced them to construct and tender this unique and handsome evidence of their skill and devotion, to the State Board of Agriculture. The Executive Committee, realizing the great industry of which they form an important part, promptly accepted it and placed it in the conspicuous place it so well deserved. The pagoda was under the care of the club, its President, Miss Jessie L. Colson, being appointed Superintendent in charge of the agricultural exhibit at Chicago,"* a position she filled with great credit to herself and the State during the entire period of the Exposition, and to whose intelligent management the great success of the exhibit is due. Miss Colson was ably assisted during the last months of the Fair by Miss Ellen M. Coles, another member of the club. These ladies took great pride in bringing to the notice of visitors the many advantages of the State, as to location, soil, climate, markets and accessibility for market-gardening, as well as manufacturing and mechanical pursuits, for which they were tendered a vote of thanks by the State Board of Agriculture.

The officers of the club are:

* From New Jersey Hand Book, 1893.

REPORT ON NEW JERSEY EXHIBIT. 517

<i>President</i>	MISS JESSIE L. COLSON.....	Woodstown.
<i>Vice President</i>	MRS ANNIE C. P. FLITCRAFT.....	Woodstown.
<i>Secretary</i>	MISS CORNELIA WOOLMAN.....	Woodstown.
<i>Corresponding Secretary</i>	MRS. JENNIE HUMPHREYS.....	Woodstown.
<i>Treasurer</i>	MRS. LAURA M. LIPPINCOTT.....	Woodstown.

So conspicuous was the interest manifested by the ladies of the State, and the high character of their work in making the State exhibit a success, that a special vote of thanks was extended to them by the Legislature of 1894 ; and when the following resolution, viz.—

“Be it resolved by the House of Assembly (the Senate concurring), That the thanks of this Legislature are due and are hereby tendered to the Board of Woman Managers of the Exhibit of the State of New Jersey at the World’s Columbian Exposition, for the zealous and patriotic labors of these distinguished women of our State in doing their part to make our State exhibit a complete success ; with these managers we desire to include all the women of our State who have directly or indirectly aided the managers in their arduous labors.

“And be it resolved, That a copy of the foregoing resolution be sent to each member of the Board aforesaid ”—

Was presented to the Senate, Hon. George W. Ketcham, of Essex county, who had personally inspected the work of the ladies and their contributions, in advocacy the resolution, said :

“ I am sure every Senator will gladly give his voice and his vote in favor of the resolution just read. To anyone who visited the White City and saw what the women of our land had done towards building and maintaining the great Columbian Exposition, the expressions in the resolutions presented will seem but faint praise. It is the glory of our civilization that woman has been disenthralled and lifted to a position worthy of her advancing powers. Rising to an eminence heretofore undreamed of, she stands at the forefront of every movement, educational, national and Christian. With a keen appreciation of what is valued in human society, and with an energy worthy of emulation, she has contributed of her time and influence to further every noble enterprise, and in no instance more conspicuously than in the wonderful exhibit recently held in Chicago. In art, in letters, in choice handiwork, in comforts which adorn and exalt the home, her skill was everywhere seen. The Woman’s building, filled with its manifold treasures, will alone mark the American Columbian Exposition as the greatest the world has ever seen.

“ In agriculture the vast States of the West are supposed to be supreme ; their exhibits were marvels of what our soil can grow ; in these, too, the mind and eye of woman had caught the spirit and

woven into beautiful shapes the natural products of the field. Graceful bowers and curious devices in grains and fruits made the different booths a source of constant delight, and, let me say, in none of these was there a keener interest than in the pavilion of the New Jersey section. I am informed that the Ladies' Naturalist Field Club of Woodstown, Salem county, is responsible for a bower of grasses, grains and mosses which certainly had no equal of its kind in the Exposition. Its value was not so much in dollars as in its choice handiwork, which only a bright woman could have planned, and only deft fingers could have executed.

"The ladies of our State deserve all praise for their patient toil in connection with the World's Columbian Exposition, and I trust this resolution will pass as an expression of our appreciation of their work."

So well pleased was the Chief of the Department of Agriculture, that after the exhibition was set up, this congratulatory letter was sent:

"To Hon. Edward Burrough, Merchantville, N. J.:

"DEAR SIR—I beg to congratulate you upon the very satisfactory exhibit which you have made. Its general excellence is certainly creditable to you and to your State.

"Very respectfully yours,

"W. I. BUCHANAN."

IN MEMORIAM.

DIED MAY 3D, 1895, EDWARD BURROUGH, LATE PRESIDENT OF THE
NEW JERSEY STATE BOARD OF AGRICULTURE.

The death of Mr. Burrough, occurring so soon after the last annual meeting of the Board, which he attended, and at which he delivered his last annual address, has led the Executive Committee to place his portrait in this report as a fitting tribute to him, believing it will be a gratification to his many friends. In doing so the committee reiterate the resolutions passed at the time of his resignation, which are as follows :

"WHEREAS, In view of the long-continued and faithful services of Edward Burrough as President of the New Jersey State Board of Agriculture, now, at his request, about to end,

"Resolved, 1, That we hereby express our emphatic appreciation of the gratuitous work done by him in furthering the work of the State Board and of the agricultural interests of the State.

"Resolved, 2, That we consider the farming business and the farmers of the State to have both been brought into greater prominence and influence by the untiring efforts and watchfulness of President Burrough during his official connection with this Board.

"Resolved, 3, That the members of the Executive Committee hereby express their high appreciation of Mr. Burrough both as a citizen, as a member of this committee and as our presiding officer; as chairman both of this committee and of the State Board, his rulings have been honorable; he has endeavored at all times to accord to each member a hearing, and to all, justice.

"Resolved, 4, That we extend to him and his family our best wishes for a continuous prosperous life, a peaceful old age and a blessed hereafter."

The committee express their profound sorrow at the sudden termination of his useful life. He died as he lived—at the post of duty. They also extend their sincere sympathy to his bereaved family.

(Signed)

D. D. DENISE,
President.

E. B. VOORHEES,
Vice President.

WM. R. WARD,
Treasurer.

FRANKLIN DYE,
Secretary.

T. F. D. BAKER,

WM. R. LIPPINCOTT,

B. R. CLIFFORD,
Executive Committee.

ACCOUNT OF MR. BURROUGH'S DEATH AND SKETCH OF HIS LIFE.

Edward Burrough fell dead on May 3d, 1895, at the residence of General E. Burd Grubb, at Edgewater Park, N. J. Mr. Burrough had just completed the delivery of an address at the annual reunion of the Twenty-third New Jersey Regiment, when his death occurred.

Mr. Burrough was the guest of the association, and when he rose to speak said it might be the last time he would ever address them. He had spoken at some length to the veterans assembled, and in concluding said: "I will now close, and if I am not present at the next reunion, I hope to meet you over the river." At these words he staggered and fell, and in a few moments was a corpse.

Mr. Burrough was born in 1843, his parents being members of the Society of Friends. He had lived on a farm all his life, purchasing, after his father's death, the old Burrough homestead, near Merchantville, Camden county, which has been in the family for over one hundred years. Mr. Burrough has always been deeply interested in public affairs, through a public-spirit-edness which has been characteristic of all his actions.

On July 15th, 1864, he formed one of the company of Minute Men which left Camden for the defense of Baltimore, under command of Captain R. H. Lee, and was in several engagements, and at the conclusion of the Rebellion, was honorably discharged.

He was elected to the House of Assembly in 1879 and in 1880, and also held the position of County Clerk of Camden county. Both these positions he filled with ability and faithfulness. But the work by which he was best known and in which he took the greatest interest was in connection with the State Board of Agriculture, with which he has been identified for the past twenty years. Nine years ago he was elected President of the Board, which office he ably filled until he resigned at the meeting of the Executive Committee, held at his home in September, 1894. He found the step necessary when he was appointed by Governor Werts to the position of State Road Commissioner, which office he filled at the time of his death. He was also President of the New Jersey Forestry Association.

Mr. Burrough's earnestness and public spirit were shown most prominently in his work in connection with New Jersey's agricultural and horticultural exhibit at the Columbian Exposition. The State World's Fair Commission having asked the State Board of Agriculture and Horticulture for exhibits, Mr. Burrough was appointed by the Executive Committee to collect, set up and maintain the exhibit. This was an arduous undertaking, but it was Mr. Burrough's great desire to place New Jersey agriculture, as he often said, in the "front rank among her sister States."

His final report covering that work appears in this annual report of the State Board of Agriculture and also his last annual address to the Board. (See pages 52 and 509.)

Mr. Burrough seldom complained of ill-health, although it was evident to those most intimately associated with him that his long-continued and exacting work in connection with the World's Fair had made serious inroads upon his health.

CONTENTS.

(521)

You Are Viewing an Archived Copy from the New Jersey State Library

CONTENTS.

A.

	PAGES.
Annual Meeting—Minutes of.....	11
Address by—	
Hon. Edward Burrough.....	52
Agricultural Expositions.....	56
Young Men and Farming	58
Resignation and Farewell Address.....	59
Geo. L. Gillingham—	
Rearing and Management of Swine for the Greatest Profit.....	62
Discussion on.....	71
Prof. John B. Smith—	
Nurseries as Factors in the Distribution of Injurious Insects.....	75
Discussion	82
Prof. B. D. Halsted—	
The Crossing of Plants.....	83
Discussion on—Van Deman.....	89
H. B. Gurler—	
Comparative Profit to the Farmer from Making and Selling Butter, or Selling Milk.....	97
Comparative Value of Cows.....	101
Feeding and Management.....	104
Influence of Silage on Butter and Milk	107
Stables and Ventilation.....	110
Testing Both Cows and Milkers.....	112
Effects of Dehorning.....	115
Feeding Value of Skim Milk.....	117
Fertilizing Value of Skim Milk.....	120
Prof. W. I. Chamberlain—	
The Present Revolution in American Agriculture, &c.....	123
Statistical Tables.	124-128
Over-Production and Under-Consumption.....	129
Change in Ratios in Gold and Silver.....	131
The Personal Equation and Moral Question.....	133
Opinions of Others.....	137
Minor Evils Affecting the Farmer.....	141
L. F. S. Schenck—	
The Relation of the Finances to the Agricultural Interests of this Country	144
Warren W. Rawson—	
Gardening Under Glass.....	157
Discussion.....	161-166

CONTENTS.

Addresses— <i>Continued.</i> '	PAGES.
Irrigation of Market-Gardens.....	166
Discussion on.....	168-176
Prof. L. H. Bailey—	
Some of the Bearings of the Evolution-Teaching Upon Plant Cultivation.....	177
Discussion on.....	188-192
John H. Denise—	
The A, B, C of Grass Culture.....	203
Crimson Clover, Harvesting, Marketing.....	207
Samuel Cushman—	
The Practical Poultry Industry.....	210
Fanciers and Poultry Shows.....	212
State Should Assist this Industry.....	214
Diseases, Cause and Prevention.....	215-218
Merits of Different Breeds.....	219
Colonizing in Open Fields.....	221
C. E. Chapman—	
Poultry for Profit.....	227
Cost and Profit—Tables.....	228
Hens—Egg Type, Scratch Type.....	230
Egg Foods and Egg Production.....	232
Poultry-Houses.....	234
B. C. Sears—	
Thirty-five Years' Experience in Dairying.....	239
Purchasing Power of Milk in Different Years.....	240
Arrangement of Barn, Stables, Silos, &c.....	242
Ways of Feeding and Feeding Rations.....	243
Prof. James Cheesman—	
Butter-Making, &c.....	247
Effect of Different Feeds on Product.....	249
Hon. W. I. Buchanan—	
Agricultural Exhibits at the Columbian World's Fair.....	495
A Trip Through the Building.....	496
The Farmer to be Envied.....	505
Burrough's Report on.....	509
B.	
Burrough, Edward—	
Portrait and Residence.....	10
Sketch of His Life, Death, and Action of Executive Committee Thereon.....	519, 520
Beekeeping and Resolutions.....	400
C.	
Committees.....	11, 45
Cranberry Crop for 1893-94.....	44
County Board Reports—	
Statistical Table of Farm Crops.....	329

County Board Reports—*Continued.*

	PAGES.
Atlantic County—	
Officers and Report.....	337
Bergen County—	
Organization and Officers.....	343
Burlington County—	
Officers and Report.....	345
Vegetable and Fruit Yield.....	349
Board Meeting—Discussion.....	354
Farmers' Institute—Moorestown.....	358
Climatic History and Table—Beans.....	362
Agricultural Society—Officers and Report.....	364
Camden County—	
Officers and Report.....	369
Cape May County—	
Officers and Report.....	373
Agricultural Crops—Condition.....	374
Poultry and Eggs.....	379
Climatic History and Table.....	382
Tomato-Raising—Van Gilder.....	384
Cumberland County—	
Officers and Report.....	387
Essex County—	
Officers and Report.....	389
Institute Proceedings.....	390
Gloucester County—	
Officers and Report.....	393
Hunterdon County—	
Officers and Report.....	395
Peaches—Yield and Marketing.....	398
Dairying—Report of Creamery.....	401
Crimson Clover—Fitzga.....	403
Mercer County—	
Officers and Report.....	407
Tomato-Growing—Bacon.....	413
Papers and Discussion.....	417
Inter State Fair Report in Full.....	423
Middlesex County—	
Officers and Report.....	427
Monmouth County—	
Officers and Report.....	431
Crimson Clover.....	433
President's Address.....	437
Report of Directors.....	441
Tomato-Canning in the County.....	447
Morris County—	
Officers and Report.....	449
Roads and Road-Building.....	453
Ocean County—	
Officers and Report.....	457

County Board Reports—*Continued.*

	PAGES.
Salem County—	
Officers and Report.....	463
Feeding Dairy Cows.....	466
Somerset County—	
Officers and Report.....	473
Sussex County—	
Officers and Report.....	479
Union County—	
Officers and Report.....	483
County Roads—Amount Expended.....	485
Warren County—	
Officers and Report.....	489
Crimson Clover.....	207, 381, 403, 433
Contagious Diseases of Animals—Hunt.....	271
Canning Industry—	
Cumberland County.....	388
Hunterdon County.....	397
Mercer County.....	410
Monmouth County.....	432-447
Referred to.....	350, 352, 376, 387, 459
Canned in the State in 1893.....	333

D.

Dairy—	
Milk Product, Dairy Tests—Secretary	39
Gurler's Address on.....	97
The Grout Oleo Bill.....	192
Sears' Address on.....	239
Butter-Making—Cheesman.....	247
Referred to.....	354, 378, 392, 401, 408, 460
Feeding Dairy Cows—Voorhees.....	466
Feeding Rations.....	470
Milk Cans Differing in Capacity.....	40

F.

Forestry—Importance of, &c.—Secretary.....	35
Burrough on.....	53

I.

Illustrations—	
State House—Frontispiece.	
Portrait of Ex-President Burrough.....	10
Residence of Ex-President Burrough.....	11
Poultry Types.....	230, 231
Poultry-Houses	234, 235
Farm Scene in Camden County.....	368
Hunterdon Peach Exchange.....	394
Denise's Kieffer Pear Orchard.....	430
Pagoda—World's Fair.....	515
Inter-State Fair Association—Report of.....	423

M.	PAGES.
Minutes of Annual Meeting.....	11-224
Committees Appointed.....	11
Gov. Hoard's Letter.....	26
Freight Rates, Resolution and Discussion.....	26
Farmer's License to Sell His Products—Resolution on.....	91, 193
Economy in Legislation.....	92
Election of Officers and Remarks.....	94
Resolution on Grout Oleo Bill.....	192
Resolution on Tuberculosis.....	194
Exhibits and Report on.....	195
Corn Exhibit and Distribution—Burrough.....	196
Free Mail Delivery—Resolution and Discussion.....	197
Resolutions on Taxation, Foul Brood, Freight Rates.....	201-203
Melon-Louse and Cut-Worm Exterminators.....	357
 O. 	
Officers and Directors.....	5-7
 P. 	
Poultry—	
Cheesman on.....	210
Chapman on.....	227
Referred to.....	348, 379, 394, 409, 429, 452, 464, 470, 492
Peach Yellowa vs. Plum Rot.....	399
Pear Fire Blight.....	423
 R. 	
Resolutions on—	
Tuberculosis, by Executive Committee.....	12
Action on Report of Commission.....	194
Free Mail Delivery—by Executive Committee.....	13
Discussion of—by the Board.....	197
Teaching Agriculture in Common Schools.....	14
Resignation of President Burrough—Executive Committee.....	17
Reduction of Freight Rates on Fruit.....	26
Oleo Bill and Farmers' License.....	192
Foul Brood Among Bees.....	400
Reports of—	
Executive Committee.....	12
Action on Free Rural Mail Delivery.....	13
Action on Agricultural Education.....	14
Action on Resignation of President Burrough.....	17
Action on Electric Railroads.....	18
Committee on Legislation.....	22
Secretary.....	29
Increased Agricultural Production.....	30
Wages and the Cost of Production.....	32
Encouragements to Agricultural Life.....	33
Forestry.....	35

CONTENTS.

Reports of— <i>Continued.</i>	PAGES.
Dairy—Milk Production and Value.....	39
County Boards and Institutes.....	42
Canada's Great Fair.....	46
Discussion on.....	51
World's Fair Potatoes.....	72
Committee on Officers Reports'.....	98
Committee on Exhibits.....	195
Committee on Resolutions.....	201
Tuberculosis Commission.....	255
Recommendations	258
Discussion on Report	260
Bovine Tuberculosis—McGuire.....	264
Contagious Diseases of Animals—Hunt	271
Tuberculosis Among Cattle.....	273
State Agricultural Society—Officers	277
Report of Secretary.....	279
Number and Breeds of Cattle Exhibited.....	283
Treasurer's Report.....	289
Special State Premiums	295
State Grange.....	305
List of All Granges	309
Committee on County Board Reports.....	315
New Jersey Exhibit at World's Fair—Burrrough.....	509
S.	
Statistical Tables—	
Average Wages of Farm Laborers.....	32
New Jersey Crop Yields and Values.....	34
Cranberry Crop of 1893-94.....	44
Shrinkage of Farm Values—Chamberlain.....	124
Export Prices of Wheat—Chamberlain.....	125
Gold Price of Silver and Leading Commodities—Chamberlain.....	126
Wheat Areas, Crops, Exports, &c.—Chamberlain	128
Of Farm Crops in New Jersey.....	329
Swine-Rearing for Profit—Gillingham.....	62
T.	
Tomato-Growing.....	384, 413, 447
Tuberculosis—	
Report of Commission to Investigate.....	255
Bovine Tuberculosis—McGuire.....	264
Dr. Hunt on.....	273
W.	
Weather and Temperature Records.....	341, 362, 382

You Are Viewing an Archived Copy from the New Jersey State Library