

STATE OF NEW JERSEY
DEPARTMENT OF AGRICULTURE

ALVA AGEE, Secretary

BULLETIN

No. 9

Second Annual Report

OF THE

New Jersey

State Department of Agriculture

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Annual Report of the New Jersey Department of Agriculture

REPORT OF THE SECRETARY

ALVA AGEE

The annual report of the State Department of Agriculture for the year ending October 31, 1917, which I have had the honor to make to the Governor of New Jersey, is hereby made a bulletin in the series which the Department began to publish one year ago. Its mailing list is composed of ten thousand names of practical farmers whose interest in the development of our state's agriculture is known. The reorganization of the State Board of Agriculture and the creation of a Department of Agriculture that would be directed by the State Board was a plan approved by the farmers of the state, and they should be acquainted with the results obtained by the Department year by year. The burden of work, due to problems created by the war, came before any special appropriation had been made for enlarged work, other than a small item in the act creating the Department. The revenues, to the close of the present fiscal year, have been those of the various boards and commissions whose work was taken over. Provision was made for increased efficiency in the coming year through an increase in appropriation of 25 per cent, which was made by the Legislature with the approval of the Governor.

OUTLINE OF ORGANIZATION

The Department of Agriculture is composed of—

1. A State Board of Agriculture, a body of eight practical business farmers, which controls the activities of the Department and determines its policies.
2. A Secretary, who is the executive officer of the State Board and in whom is vested authority by the Legislature for the direction of the Department.

3. A Bureau of Animal Industry, which is constantly in touch with livestock conditions throughout the state and directs preventive and remedial measures for the control of animal disease.
4. A Bureau of Markets, whose work is to aid in the efficient distribution of food-stuffs by standardization of farm products, by the organization of producers and consumers for direct dealing and by facilitating transportation of perishables.
5. A Bureau of Statistics and Inspection, which has accurate monthly records of crop conditions throughout the state and inspects shipments of nursery stock into New Jersey for the purpose of excluding destructive insect and fungous pests.
6. A Specialist in Farm Management, who is charged with general supervision of the 8,000 acres of land attached to the state institutions and their management so that there is the greatest possible food production.

There are natural lines of cleavage separating the fields of labor of the Department of Agriculture, the State Agricultural College, and the State Experiment Station, but conditions are such that some control work is done most efficiently at the Experiment Station and some educational work is provided for in the organic law of the Department. However, control work in carrying out the will of the state respecting contagious and infectious diseases of animals and the diseases and insects most harmful to plant life is a leading feature of the Department's activities.

TUBERCULOSIS CONTROL

Our state would be the dumping ground of other states for tubercular animals if a rigid system of control were not in effect. The dairy interests of our state are large, and milk is an important article of food. The protection of public health, and the preservation of our dairies, led to the enactment of laws whose enforcement is among our duties. We expended \$35,000 in this one line of control work during the year, and were not able to inspect some suspected herds, as the sum available for payment of condemned cattle was limited. The increase in appropriation for the year beginning November 1, 1917, will enable us to co-operate more fully with the State Board of Health in the effort to protect the public, and it is believed that this can be done while eliminating some sources of annoyance and loss to which dairymen are now subjected. We must bear in mind that net profits in the production of milk and cream always are small, and that the co-operation and hearty good-will of breeders and dairymen in eliminating sources of loss through disease are essential to success in the state's endeavor.

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The State Board of Agriculture did not appoint a chief of the Bureau of Animal Industry until August first of this year, and it is a matter of congratulation that it was finally able to secure Dr. J. H. McNeil, who has a national reputation as a veterinarian, and wide acquaintance among men engaged in control work in the national Department of Agriculture and our adjoining states. It is the policy of Dr. McNeil to work in close accord with breeders and dairymen, pointing out the economic advantage of eliminating disease, as far as possible, and making sure of their assistance in all our undertakings. Every breeder, dairyman and dealer must understand that his interests are guarded as far as possible by the state, but that in law enforcement every individual stands on the same plane, and any shadow of favoritism is unendurable.

It is the belief of the Department that the supply of milk may be conserved by a system of quarantine that may permit the segregation of all tubercular animals in certain districts of the state where pasteurization is now practiced, or may be practiced, leaving other great areas in the state practically free from tuberculosis, thus saving the condemnation of many valuable animals, and fostering the production of our own dairy cows within the state. While some increase in our force of inspectors, and some increase in the sum paid for condemned animals, in accordance with law, appears necessary to the protection of public health in the immediate future, the policy of quarantine that the bureau hopes to see adopted should quickly result in an improvement in fundamental conditions, favoring both the cities and the producing districts.

OTHER CONTROL WORK

An epidemic of anthrax developed in southern Jersey during the year and was stamped out by energetic action, twelve hundred cattle, horses and mules being vaccinated.

The Bureau of Animal Industry hopes to make the control of glanders in horses so effective that there will not be excuse for the quarantines placed against New Jersey horses going into New York, that cost our team owners many thousands of dollars annually for the mallein test. The present situation surely can be corrected and remove from our team owners a financial burden that seems to them unnecessarily oppressive.

Hog cholera continues to bring serious loss to the state, partly in the number of animals affected, and much more in the handicap to meat production that fear of this disease occasions. The Department continues to push its educational work, believing that the loss cannot be reduced to its possible minimum until all of our farmers realize that good sanitary conditions and inoculation are necessities.

NURSERY INSPECTION

The great horticultural interests of New Jersey, and the attractive residential sections of our state, are peculiarly dependent upon the activities of the Bureau of Inspection in our Department. It is only through efficient inspection that our state has been saved from invasions of the gypsy and brown-tail moths that have brought great damage to some other states, Massachusetts alone expending half a million dollars annually in an effort to stay their ravages. The report of this bureau shows that 165 nurseries have been inspected during the year, and 152 certified as free from dangerous injurious pests. The importation of nursery stock from Europe, Asia and South America during the past year embraced 6,539 cases, all of which were inspected and 31 species of pests found and removed. Importations from other states into New Jersey called for the inspection of 746 cases and 13 carloads of nursery stock, and 74 violations of our law were dealt with by the destruction of the infested stock. The quarantine is a necessary means of the prevention of infestation at times, and has been resorted to during the year when necessity required. The attempts of certain firms to violate our quarantine regulations have been resisted, regardless of the pressure from sellers outside the state and buyers within. The power of quarantine is invoked only when necessity compels, and then it must be respected by everyone.

It has been a physical impossibility to inspect all of the nursery stock imported into the state and grown in the state, the force of men at work being inadequate. There cannot be good protection until such work can be thoroughly done in every instance. It is possible to add another competent inspector November first, and if the funds permit a second addition will be made in the early spring. When shipments arrive, inspection cannot be delayed unduly, but all stock should be gone through, regardless of the reputation of the owner or shipper, and this degree of thoroughness will be reached as soon as funds will permit.

LICENSE OF MILK DEALERS

The last Legislature enacted a law requiring the licensing and bonding of dealers in milk and cream bought from New Jersey producers for sale or manufacture. Enforcement of this law has placed a burden of work upon the Department, and difficulties have arisen. While most leading dealers have obeyed the law, and many of them have expressed appreciation of the attempt to eliminate the dishonest competition, there has been some combination to resist enforcement of the law.

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APIARIES

The state bee inspector has examined 18,265 colonies of bees during the last six years and brood diseases have been reduced from 17.2 per cent to 9.7 per cent. Demonstration apiaries are being conducted in co-operation with the Division of Extension of the New Jersey Agricultural College. The State of New Jersey is capable of a large production of honey, and the bee disease control and demonstration work of the Department is encouraging the development of this interest.

MARKETING PROBLEMS

Our chief of the Bureau of Markets makes a report of practical performance that is encouraging. The difficulties that lie in the way of any reorganization of our methods of distribution are great. Influential business interests are vitally concerned, and the customs of producers do not change easily because the success of the individual is at stake. The bureau recognizes the necessity of standardization in the matter of grades and packages if co-operation in selling, or direct selling by producer to consumer, is made possible. The largest net returns from our state's investments in crops of all sorts likewise depend upon standardization, and in the first sixteen months of the existence of this bureau some headway has been made.

Co-operative enterprises have been fostered and three or four that have come into considerable prominence have been organized in co-operation with the bureau.

The effort to establish city markets has been successful beyond expectation, the interest in food production and distribution this year making this possible.

In direct service to the state, with immediate return, the Bureau of Markets has had exceptional success in dealing with transportation problems. The service rendered by three night trains bringing perishable stuff into Jersey City yards has been a matter of criticism among producers for years, a delay of two or three hours in arrival causing congestion in transfer to New York, so that goods failed to reach the market in time for sale. The bureau found the railroad authorities entirely appreciative of the situation when it was brought exactly before them by means of data secured in weeks of investigation, and without delay an improvement in service was made. Unusual burdens upon railroads this year have made improvement difficult to maintain, but there has been greater effort than ever before to prevent the loss that attends the failure of trainloads of perishable stuff to reach

market on time for sale the same day. The attitude of the transportation lines in this matter was typical of that in many other cases brought to their attention. Changes have been made in the routing of shipments, preferential rates have been made in heavy-producing sections that have been overlooked by the railroad officials, lost goods have been quickly traced or paid for, refrigerator cars in adequate number have been quickly rushed to shipping points at the bureau's request, and this one feature of the work of the Bureau of Markets is having a cash value several times greater than the cost to the state of the entire bureau.

The efficiency of this bureau will be increased by the addition of two men to the staff November first, the appropriation for the coming year making this possible.

REDUCED COST OF DISTRIBUTION

By direction of the Governor the Department secured wholesale prices on leading food products on farms throughout the state and in retail city markets during the summer, and the result showed that our methods of distribution are very costly. It is entirely practicable that municipalities of the state should make it possible for all residents to secure their chief food supply at prices only a trifle above producers' prices, plus freight charges at carlot rates. The cities should be empowered by state law to rent large storerooms conveniently located from which they would distribute for cash the leading food staples. The credit of a city would enable it to buy at the lowest rates, and a plan has been devised that would safeguard the interests of the public through publicity respecting prices and sources of goods. Small distributors having patrons who wish goods delivered could obtain their supplies of perishable stuff at cost from these city stores which would sell in a retail way only for cash and without delivery. The Bureau of Markets in the Department of Agriculture would advise every municipality regarding prices in centers of production, and would be a clearing house for information among all municipal stores. Such legislation should be only a war measure.

CROP REPORTS

The Bureau of Statistics and Inspection inaugurated a system of crop reports last May. Mr. Weiss has secured the assistance of 250 voluntary correspondents and is enabled to get data regarding the condition of crops, livestock, etc., and of crop yields that serve annually as a check upon other available reports. We secure the data by coun-

ties and obtain reports on special products not covered by other agencies. The accuracy of these reports has proved to be greater than was anticipated, in view of the newness of the organization, and the large corps of selected reporters, to whom the thanks of the state are due for their unselfish service, necessarily will gain in efficiency from year to year. Attention is called to the bureau's statement respecting this service.

FARMS OWNED BY THE STATE

There are 8,852 acres of land attached to the institutions belonging to the state, and in the interest of efficiency Governor Edge directed the Department of Agriculture to detail someone to act as an advisor in the management of this land. The Division of Extension in the State College of Agriculture and the State Department of Agriculture desired to co-operate in this service, the expert knowledge of the specialists at the college and station being needed. They were fortunate in securing the service of W. B. Duryee as their specialist in farm management for this assignment, and attention is called to his report, which will have interest for every reader. The headway that has been made has been due to Mr. Duryee's special ability for this work, and to the hearty co-operation of the state officials. Most of the institutions have welcomed the service that could be rendered.

The lines of work undertaken are as follows: a campaign for the saving of perishable products, complete and scientific plans for the draining of all wet lands in the state farms, accurate mapping of farms, adoption of uniform rations which are cheapest for the live-stock, the standardizing of fertilizer formulas, plans for supplying lime from a state-owned deposit by convict labor, a uniformity of inventory and cost accounting systems, crop production based upon the needs of eight thousand institution inmates, and the improvement of farm methods.

THE STATE'S IDLE LAND

The State Board of Agriculture believes that the state has hundreds of thousands of acres of idle land that can be brought into profitable production. The Division of Agricultural Extension at the State College began demonstration work two years ago to show that various soil types in the southern half of New Jersey, that are popularly supposed not to have much agricultural value, can be put into the productive class without the purchase of any manures or fertilizers other than phosphorus and lime, neither of which is expensive in normal times. Inoculated legumes are used to furnish nitrogen and organic

matter, and the result of that demonstration work already is most encouraging.

The State Board of Agriculture is doing some work in the pines of Burlington county that supplements the college work. It appropriated money for the purchase of fertilizers and seeds for eight plats of land that were used by as many families in the production of food. Cowpeas, beans and garden peas made excellent growth, and within another year it is expected that these plats will be capable of growing alfalfa. This indicates the possibilities of large areas within that section of the state.

ALFALFA IN NEW JERSEY

The State Board of Agriculture believes that New Jersey has very large areas of idle land that are capable of producing alfalfa with profit, and thousands of farms now under cultivation should be producing this legume freely to provide a protein food for dairy cows and other livestock. We are now expending a vast sum of money for protein feeds produced outside of the state, and the equivalent of much of this feeding stuff could be secured in alfalfa at much less cost. The Department has fostered the organization of a state alfalfa association. It is believed that the chief failure of alfalfa seedings in the East during past years has been due to poor seed. A supply of the right strains was not available. The secretary of the alfalfa association, Professor Frank App, made a trip into the Northwest last summer, at the expense of the Department of Agriculture, to investigate sources of supply and to make arrangements such that New Jersey could obtain dependable stocks of seed direct from producing associations.

STATE DAIRYMEN'S ASSOCIATION

The Department must have the co-operation of the dairymen in dealing with infectious and contagious diseases of livestock, and to this end it promoted the organization of a state association last winter. Its executive committee, representative of every section of the state, has been in consultation with the Animal Industry Committee of the State Board of Agriculture, spending several days in all in consideration of control work. The best interests of producers of milk, and of consumers, and of the state, as represented by the State Board of Agriculture, are identical, and the Dairymen's Association has a wide field of usefulness before it in assisting the Bureau of Animal Industry in the eradication of disease that constantly jeopardizes the dairyman's business.

FOOD PRODUCTION

The declaration of war turned the attention of many people in our state to food production for the first time, and the Department was nearly overwhelmed with inquiries from people wanting advice regarding the ways in which they could render service through offerings of land, or personal service, or through the planting of gardens and land which had been lying vacant. Thousands of letters were received, and adequate attention to all demands was impossible with the staff that was available. Special mention should be made of the work done by Charles H. Nissley, a specialist in market gardening at the college, who gave up his project work and spent four months in the Department at Trenton, taking care of correspondence and giving personal advice.

IDLE LAND

There was much misapprehension by the public respecting the ability of the state to make use of vacant land. The offerings were proof of the patriotic spirit of the people, but all that the Department could do in most instances was to ask municipalities to list such land and to offer it to people of the community that were in a position to make use of it. Large numbers of people wrote, offering their services as laborers on farms, and were referred to county demonstrators in nearby counties that were needing labor.

THE LABOR PROBLEM

The drain upon farm labor made by factories, and later by the War Department, created a great shortage, and the only considerable sources of supply were the temporarily unemployed that could be reached by the State Department of Labor, and the pupils in the schools. The Department of Labor cannot promise any great supply of experienced farm laborers, and necessarily cannot know the dependability of many of the people who come to its employment offices, but it should be made a matter of record that many hundreds of farmers feel a debt of gratitude to the State Department of Labor, in that the saving of their crops was made possible only through the energy of the department's offices in supplying help. County superintendents of farm demonstration co-operated heartily in this service.

Another important course of supply of labor was children of school age, and the Department of Public Instruction, county superintend-

ents of schools, county farm demonstrators, the State Agricultural College, the Department of Labor, and the Department of Agriculture co-operated in the work of placing boys. The accomplishment was not as great as it should have been, partly because communities were not convinced of the value of the boys and were not inclined to make the needed housing provision, and partly because the boys did not realize the seriousness of the proposition. Plans now under way will lead to more efficient utilization of such labor next year.

A BAN UPON LUXURIES

The New Jersey State Board of Agriculture urged the National Congress last spring to place a ban upon the production of articles that do not contribute to the winning of the war. There is no other thoroughgoing solution of the labor problem. Our farmers are patriotic, but many of them believe that they dare not plant their usual acreage next spring because the labor shortage promises to be greater than they experienced during the past year, when it was impossible to give good tillage to part of the acreage and to harvest crops on time. If one million workers were barred from industries that are legitimate in times of peace but now attract labor for which our country has a greater need, all industries essential to the war could be cared for and food production would not be limited in a degree that may be disastrous under present conditions.

COMMERCIAL FERTILIZERS

New Jersey is peculiarly dependent upon a supply of commercial fertilizers, and there is nothing that the Department of Agriculture has been able to do other than to urge national action. It has been instrumental in securing a wider survey of the need for nitrate of soda than was contemplated, but the need can be met only by action of our national authorities. The State College of Agriculture, through its county demonstrators, has made a survey as a basis for estimate, and the interests of our state will be cared for if the national government finds it possible to secure supplies on time. The only other element of plant food that is available in large amount is acid phosphate, which is being secured by the farmers through the usual channels of trade, but the total supply for the country is limited.

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COUNTY BOARDS OF AGRICULTURE

Since the organization of the State Department of Agriculture there has been earnest effort to assist county boards of agriculture in securing increased efficiency. The state can render a service of inestimable value to its agriculture in direct dealing, but the best development of rural wealth, material and spiritual, can come only through the organized effort of the natural leaders of local communities. New Jersey is most fortunate in having legal organizations known as "County Boards of Agriculture," which bring into association the progressive men of the counties. Much of value has been done by these boards in the past, but in many counties there has been no attractive program of work that would bring together the people of all sections of the county in such numbers that there would be satisfactory accomplishment. The State Department, in co-operation with the Division of Extension in the State Agricultural College, has placed much of the responsibility for farmers' institutes and the direction of the work of county farm demonstrators in the hands of the county board, the immediate direction being given by an executive committee selected by community representatives. Credit is due John H. Hankinson, the state leader of county demonstration, in working out the details of this plan which has proved acceptable throughout the state. Interest in county board work has been aroused in such a degree that well-planned membership campaigns have been undertaken, and the aggregate of county board membership is numbered by many thousands.

The last Legislature recognized the value of the service to the state rendered by county boards in making an appropriation in its supplemental bill for the last year and a special appropriation for the next fiscal year. While the material interests of the state are vitally helped by the active participation of county boards in the direction of farm demonstration and farmers' institutes and in the gathering of statistics, there is even greater social and spiritual value in the opportunities for leadership that are presented to great numbers of capable and unselfish men who would do something of value for their local communities and counties and state.

FARMERS' INSTITUTES

Last year the Department held seventy-eight farmers' institutes, sixty-eight of which were regular institute meetings. The total attendance was 14,820. We believe that meetings of this character have their interest and profitableness measured by the directness with which they deal with local agricultural problems, and effort was made to secure speakers intimately acquainted with conditions.

County boards of agriculture, acting through their executive committees, which act as the advisory committees of county farm demonstrators, should have much responsibility for the institutes, and therefore the Division of Extension at the College has been requested to arrange for meetings through county farm demonstrators and their executive committees in all organized counties. Some of the quarterly meetings of the county board can perform the same educational work as is contemplated through institutes and will receive direct assistance on their programs.

"AGRICULTURAL WEEK"

The law creating the new State Board of Agriculture provided for an agricultural convention to be held annually for the election of two members of the State Board. This meeting was held January 24, 1917, and the State Board invited many livestock and agricultural associations to hold their annual meetings on the two days succeeding the date of the agricultural convention. The "Agricultural Week" at Trenton was made a marked success through the cooperation of the following associations:

- State Horticultural Society
- State Poultry Association
- State Berkshire Breeders' Association
- State Holstein-Friesian Breeders' Association
- State Jersey Cattle Association
- State Guernsey Breeders' Association
- Farm Demonstration Workers
- Farmers' Institute Workers
- Social Service Workers

The approval of this arrangement was so general that another invitation has been extended by the State Board for next January, and a large number of associations have arranged to be in session at Trenton during the week of the agricultural convention. Men of national prominence are brought to the annual meetings by the various associations, and the progressive farmers in every part of the state look forward to "Agricultural Week," when they can meet with others in consideration of livestock, farm and rural problems.

PUBLICATIONS

There is assurance that the series of bulletins issued by the Department is appreciated, and one thousand copies of each bulletin have been left without cover so that they may be bound together and distributed as the complete annual report of the Department, this report becoming the ninth bulletin in the series for the year.

A series of publications known as circulars have been issued as the need of presentation of practical and special information has arisen during the year. A few of the issues have been very large on account of the demands of schools and the general public for material dealing with crop production and conservation.

The list of bulletins and circulars for the year is as follows:

Bulletins

- | | | |
|-----|---|--|
| No. | 1 | The Swine Industry in New Jersey |
| | 2 | Nursery Inspection |
| | 3 | Farmers' Selling Organizations in New Jersey |
| | 4 | Seed Potatoes |
| | 5 | Official Proceedings of the Second Annual Agricultural Convention |
| | 6 | Bureau Reports |
| | 7 | Modern Market Methods |
| | 8 | Farm Sources of Soil Fertility |
| | 9 | Second Annual Report of the New Jersey State Department of Agriculture |

Circulars

- | | | |
|-----|----|--|
| No. | 1 | Farms for Sale in New Jersey |
| | 2 | New Insects and Plant Diseases |
| | 3 | Bee Disease Control |
| | 4 | The Home Vegetable Garden |
| | 5 | Plant Corn |
| | 6 | Some Practical Suggestions |
| | 7 | War-Time Rations for the Poultry Flock |
| | 8 | County Boards of Agriculture and List of Granges |
| | 9 | War Prices and Dairy Feeding |
| | 10 | Suggestions on the Establishment of Public Markets |
| | 11 | Protecting the Home Garden from Insects and Fungous Diseases |
| | 12 | Inspection Results; New Pests |
| | 13 | The Drying of Vegetables and Fruits |

Leaflets

- | | | |
|-----|---|---|
| No. | 1 | Good Food at Little Cost |
| | 2 | Save Vegetables and Fruit for Winter; "Home Canning Instructions" |

REPORT OF THE BUREAU OF ANIMAL INDUSTRY

DR. J. H. McNEIL, CHIEF

A word of explanation is necessary inasmuch as I have been connected with the bureau only since August first of the present year, and consequently not in a position to give as full a report as might be forthcoming under other circumstances. In the preparation of this report, the files in the office have been consulted freely, and I have also familiarized myself as much as possible with the outside workings of the bureau.

In order to enlarge the field of usefulness it has been necessary, in a measure, to reorganize the forces and centralize the activities so as to avoid duplications and insure efficiency. Disease control work which has to do with the inspection and tuberculin testing of cattle, the enforcement of quarantine, hog cholera investigations, and the treatment of infected herds and stallion registrations, can be accomplished only through cooperation between the livestock breeders and those in control of sanitary work. Control work should first be directed against the diseases which are transmissible to man, and when they have been brought under submission, much has been accomplished toward their suppression and eradication in animals.

Some of the diseases which demand our closest attention and which are dangerous and transmissible to man, either directly by contact or indirectly through contaminated food products, are as follows: anthrax, foot and mouth disease, rabies, and tuberculosis. Among the other contagious diseases causing enormous financial losses among animals may be enumerated contagious abortion and hog cholera.

The dairy industry of New Jersey is a very important one, as the value of milk produced represents almost one-third of the total estimated value of all farm products, and quite as much as the combined potato, fruit and market garden crops. The scarcity and high price of milk-producing animals and of all foodstuffs for the growth and maturing of young stock makes it imperative that dairymen and breeders must not underestimate the importance of guarding and protecting the health of their animals, as pedigree alone will not make animals profitable. Great good can be accomplished when all forces work together harmoniously. Dairymen and all breeders of livestock should have protection and advice concerning the many problems which control this great industry.

CONTAGIOUS ABORTION

Many outbreaks have been reported to this office during the past year, the disease occurring in both purebred and dairy herds. The disease is gradually spreading from among the purebred herds through the medium of both private and dispersal sales. Those purchasing purebred animals for breeding or dairy purposes should determine, if possible, whether the animals are coming from an infected herd. Every agency possible should be enlisted for the dissemination of information pertaining to the prevention and suppression of this disease. Years of study have been devoted to this disease but a reliable treatment has not been found. Sanitary control results have proven most effective and should be adopted and rigidly enforced.

HOG CHOLERA

Control work relating to hog cholera has in the past been carried on under the direction of the livestock commissioner with headquarters at New Brunswick. Hereafter this work will be directed from the central office at Trenton.

In order that permanent progress may be made in controlling this disease, it is planned to place additional agents in the field to vaccinate, enforce quarantine and instruct stock owners as to the best methods to pursue in the prevention, suppression and complete eradication of this disease which causes such enormous annual losses.

ANTHRAX

A virulent outbreak of anthrax occurred in Salem and Cumberland counties during the month of August, affecting animals pastured on the low, marshy lands bordering on the Delaware River.

The disease was handled by this bureau working through the local veterinarians. The expenses of the outbreak were borne by the Department of Agriculture, and amounted to about one thousand dollars.

The disease existed on 33 farms, but in order to surround the outbreak the animals were vaccinated on the adjacent farms, making a total of 79 farms visited and over 1,200 head of cattle, horses and mules vaccinated.

The outbreaks occur quite often with considerable losses. Owners of stock have been advised that vaccination should be practiced annually, preferably in the spring, one month before the animals are turned out on grass.

GLANDERS

The major portion of the work relating to the control and eradication of glanders centers itself in the northeastern part of the state in those districts from which horses and mules enter the State of New York in the transportation of farm and other products.

A proclamation issued July 15, 1916, by the New York Department of Agriculture, requires the annual test and examination to prove the freedom from glanders of all equine animals entering, in transient services, certain specified quarantined districts of the State of New York. The districts placed under this quarantine include sections of New York City into which many horses and mules from New Jersey must enter in the performance of their daily duties, and to comply with the provisions of this proclamation entailed the examination and mallein test of approximately 15,000 horses during the fiscal year.

Our regulations require the immediate reporting to the Department of Agriculture of all cases of glanders diagnosed within the state. Upon the confirmation of such report the infected animal is destroyed. All susceptible animals occupying the same stable are subjected to an examination and mallein test, and the premises are thoroughly cleaned and disinfected, under the supervision of the Department of Agriculture.

At present the destruction of infected animals is attended by no indemnity to the owner, and this may to some extent account for the small number of cases reported, there being only 24 animals destroyed during the past year because they were infected with glanders. It does not seem reasonable to believe that this number truly represents the total number of animals developing the disease within the state during the year.

The veterinarian and owner must be led to realize the danger to human and animal lives consequent to tolerating the existence of a glanders-infected animal.

TUBERCULOSIS

Tuberculosis control and eradication is a difficult problem and of vital interest to all. The relationship of bovine and human tuberculosis has been thoroughly established and the danger of transmission to man through the medium of meat and milk also has been undeniably established. The losses to the livestock industry of the country because of the existence of the disease among animals is enormous.

Much work of an educational nature pertaining to this disease has been done, but as the disease is a slowly developing one and as the extent to which it has progressed in an animal is not always physically manifested, it does not receive the attention it should by stockmen. The work of this bureau is mainly directed to the testing of animals entering the state for dairy purposes. Private testing is done but, unfortunately, much of the work is not reported to the bureau.

The existing laws are not adequate to control the situation and should be rewritten and brought up to date as soon as possible.

The following is a summary of the cattle inspected and tuberculin-tested for tuberculosis from November 1, 1916, to October 31, 1917:

REPORT OF INSPECTION FOR TUBERCULOSIS, NOVEMBER 1, 1916, TO OCTOBER 31, 1917

Foreign Cattle

Number of imported cattle tested <i>before</i> entering state.....	7,585
Number of imported cattle tested <i>after</i> entering state.....	6,073
Total	13,658
Number of imported reactors slaughtered.....	255, or 3.7 per cent
Number of native cattle slaughtered.....	385
Amount of appraisalment of native cattle slaughtered.....	\$17,533.00
Average appraisalment of native cattle slaughtered, per head,	\$45.54

Domestic Cattle

Number of herds tuberculin-tested.....	109
Number of animals in above herds.....	2,436
Number of animals condemned.....	262, or 10 per cent
Number of herds physically examined.....	132
Number of animals in above herds.....	3,921
Number of animals condemned.....	203, or 5.1 per cent
Total number of domestic herds tuberculin-tested and examined	241
Total number of animals in above herds.....	6,357
Total number of animals condemned.....	465, or 7.3 per cent

REPORT OF THE BUREAU OF MARKETS

A. L. CLARK, CHIEF

The lines of work started last year have been continued and two new lines begun. The results are small when compared to the possibilities of improvement in the marketing of our farm crops, but a beginning has been made that gives us confidence in more far-reaching improvements in the days to come. Following is a brief report of some of our most important projects.

STANDARDIZATION OF GRADES AND PACKAGES

The importance of this subject need not be discussed; it is apparent to all who have given the subject of food distribution any thought at all. Standardization is the basis of all sound trading. No practical plan for promoting this work has yet been worked out for the more perishable small fruits and vegetables. We have confined our efforts to the grading and standardization of peaches, apples, potatoes and crops shipped by growers' organizations.

In cooperation with the horticultural department of the Experiment Station, in charge of Professor M. A. Blake, we placed in the field Messrs. L. G. Gillam and W. P. Duruz to promote standard grading and packing of peaches. The peach crop was large in the central and southern sections of the state, and of course large quantities were shipped out of the state. The Federal Bureau of Markets reported 1,214 carloads up to September 24. We are convinced that fully 60 per cent of these shipments were graded and packed in accordance with standards demonstrated by our bureau. In the large markets the favor with which dealers and buyers considered these graded New Jersey peaches was especially noticeable this year. Messrs. Gillam and Duruz began work early in the season in suggesting spraying dates and methods, and followed up with the thinning, picking and packing. A questionnaire was sent out to some one thousand growers in the state, and from the several hundred replies received, assistance was given where most needed. Nine packing schools were held and 300 persons instructed in the art of grading and packing peaches. These packers were taught with wooden imitations and later proved their efficiency on many of the large peach farms.

Apple-packing demonstrations were given at six different places where this fruit is grown in large quantities. Mr. W. A. Houston was placed in Sussex County and worked with about fifty apple growers. About ten of the largest growers have adopted grading standards and are now selling some of the finest apples grown in the East, packed so as to induce every buyer to order again.

With the approval of the State Horticultural Society an apple-grading law was framed, but at the request of some of the larger growers, it was laid over until another year. About a dozen eastern states now have grading laws which have for their object the unifying of grades and packages for apples grown in their respective states. The attitude in general of all parties interested has grown more and more favorable toward such laws this past year.

Potato grading has long been a much discussed question in New Jersey. All dealers, and many of the largest growers, are sure that potatoes should be better graded. The present rather loose methods practiced have been in vogue so long that it will doubtless take some time to assure growers of the real value of graded stock. The Mercer County Potato Growers' Association adopted the standards recommended by the United States Department of Agriculture and the Food Administration. The services of Mr. George Van Horn were given to this association to assist in carrying out their grading work. About fifty carloads were sold at an average increased price of 16 cents per bushel over the market, and the association is convinced that it pays to grade. The efforts of this small group of potato raisers was watched throughout the state, and we are confident that grading machines and more definite grades will be much in evidence next year. Mr. Benjamin Hart was placed in Monmouth County in July to assist the growers there in grading their vegetables. From the experience of Mr. Hart and other large shippers we hope to make some practical recommendations to shippers of perishable vegetables in the near future.

CO-OPERATIVE SELLING

Among the vexing problems in selling farm crops are some which large shippers do not meet but which are most disastrous to small growers and occasional shippers. The grouping of the smaller shipments under one selling agency overcomes some of these faults. New Jersey farmers are recognizing the advantages of co-operative efforts in marketing and this bureau has exerted itself to promote such activity. The farmers' exchanges of Monmouth County, Burlington County and South Jersey report a prosperous year. The Farmers'

Co-operative Association of Mercer County has continued to expand in its special field of buying supplies for its members. Both the Vineland Co-operative Association and the Monmouth County Shippers' Association are doing good work. We were able to secure a manager this year for the latter association and have worked in close co-operation with it throughout the year. New organizations with which we have co-operated this year are the North Haledon Farmers' Exchange, the Mercer County Potato Growers' Association, the Central Jersey Producers' Association, the Sussex County Fruit Growers' Association and the Morristown Dairymen's Association. In some instances the men in these associations have had only one or two objects in organizing and but two or three meetings were necessary to perfect the organization. In other cases, particularly with the Central Jersey Producers' Association, the problems presenting themselves were complicated and many meetings have been necessary. This association was organized by thirty farmers in the vicinity of Cranbury who were not satisfied with the facilities afforded for marketing their hay and grain. A conference between the farmers and the local dealers was conducive to considerable education and mutual help. After two months, members of the association reported 20 per cent. greater net receipts for hay and grain figured on a basis of no change in the market value.

All of these farmers' selling organizations include only a part of the producers in New Jersey, and yet it is certain that they affect indirectly the entire state and all its farmers. The most unfortunate phase of farm marketing is the lack of sympathy so apparent between the farmer and the buyer. This will never lead to more profitable methods. Dealers who are in the business only for their own temporary gain are a clog to progress and an unnecessary agent in distribution. Distributing agents or dealers are necessary only according to the services they perform. Those that are necessary constitute an important factor in distribution and should receive consideration when any changes are contemplated in methods of marketing.

In actual practice it seems that a farmers' co-operative selling enterprise accomplishes its greatest results by spurring on the dealers to greater efficiency and economy in their efforts. Thus, while only a very small proportion of the farmers in any community may carry on a co-operative selling enterprise, the advantages accrue to a large degree to all growers in the neighborhood.

In promoting the co-operative selling idea, the bureau has emphasized the wisdom of progressing slowly and trying the thing out first in a small way. It has been apparent that in this way the various causes for friction and criticism within the association are lessened, and the members learn to work with each other so that when really

important innovations are to be made they can be counted on to stand together and actually co-operate. The good work of farm demonstration can be recognized in the growing call for co-operation in marketing among thoughtful farmers all over the state. In every case during the past year the movement has owed its beginning to the spirit of co-operation fostered by farm demonstration work.

CITY MARKETS

Early in the spring when it became apparent that much additional planting would occur, especially of the small perishable summer vegetables, the bureau started a state-wide movement for greater home-marketing facilities. Some experience and observations lead us to advise the open-air street market as the easiest and most promising type of market for our New Jersey cities. Through the courtesy of the New Jersey State League of Municipalities, the attention of the mayors of all municipalities was called to the increased acreage planted to summer perishables. It was pointed out that every pound saved and consumed meant a pound of staples for our allies, and hence methods for easy distribution were essential. Sixteen cities took the matter under immediate consideration and established farmers' markets. In every case these markets accomplished satisfactory results. Several other cities reorganized their market systems and a number of cities are this winter preparing plans for marketing places next spring. At the present time there are in the state 20 farmers' markets, and in addition 6 municipalities have reported that the matter is under consideration. Truck farmers who ship large quantities to distant cities have assured us that in several instances it has been proved to their satisfaction that retail selling at market-places in small cities has relieved the larger markets of many small and ungraded lots of produce. This has kept the trade open and prevented the frequent gluts likely to occur when irregular shipments cause an over-supply. We are sure that fresher supplies have been available to the public, as in many cases produce heretofore hauled by growers to big cities and hauled back again by dealers has been sold direct to consumers from the farmers' wagons. We do not believe a farmers' retail market can supply any large proportion of a great city's population. In such cases farm lands are considerably removed from the residential sections and large loads must be hauled for economy's sake. Few good farmers make good salesmen and most produce, as we see it, will continue to be distributed through the work of several agents. One small farmers' retail market, however, can prevent unreasonable profits to retail dealers over a large city.

In our earlier experience we were satisfied to see a market become well established in three years. This year markets that opened in June had the appearance of long-standing markets by September. Enthusiastic persons sometimes think that a market-place should immediately lower the cost of living 10 to 20 per cent. They do not realize that a farmer who has planted for a wholesale market is in no position to sell at retail. The success of this type of market depends upon the housewife's determination toward thrift and her capacity for sacrifice and persistence. It must be remembered that for fifty years our housewives have increased their demands for service unceasingly. Retail delivery, credit, prepared foods, etc., are now the custom. The breach between producer and consumer has widened each year, and now to bring them together again necessitates some mighty upheavals in our methods. In some of the cities sincere efforts have been made to reach the three-year stage in one week and prices have been set at which farmers must sell. Such things work out only according to the relation of the supply and demand. If buyers predominate at a new market, and the demand exceeds the supply, prices of course will be high until more growers recognize its advantages and increase the supply. On the other hand, if the supply exceeds the demand the farmers soon return to other methods of selling. The success of this type of markets also depends upon the vision and foresight of the nearby small farmers. It is absolutely in their interest to have an open market where produce can be sold easily direct to the consumer. Growers, in some instances, have persisted in their support of a new market at a daily loss because they believed in its ultimate advantages. Success also depends upon the municipal authorities. A market-place may hurt certain lines of established business. If genuine economy can be secured to the working people of a city through a public market then such business lines must suffer. In reality, however, a farmers' market furnishes a more efficient method of retailing perishable products, and therefore is a constructive institution for the city's commercial development. It gives consumers fresh goods at a minimum cost. It provides the most economic method known for certain small growers to dispose of their products. It discourages unnecessary shipping to large markets. It prevents retailers from charging unreasonable prices.

TRANSPORTATION

It was clear early in the season that our railroads would be pushed to their limit in transporting war munitions, etc., together with ordinary commodities. The shipping of perishables is always a source of

annoyance to producers, and in order to prevent too great confusion this year, the bureau secured the services of Mr. Harry B. Bamford, as transportation specialist. Cordial relations have been established with all the principal transportation companies in the state. The spirit of mutual helpfulness has prevailed and many services have been rendered to shippers by these companies when opportunities were presented in a straightforward businesslike way. The Pennsylvania Railroad has at last improved its service over the Camden and Amboy division so that the shippers admit they have little fault to find with the running time. After a shortage of refrigerator cars in Gloucester county at the opening of the tomato season, a steady supply was secured and no further troubles reported. The company took special pains to place empties at loading stations in positions adapted to the convenience of loaders. At the request of the division freight agent, the potato shippers about Woodstown were interviewed and the harmful practice of holding loaded cars explained, with the result that loaded cars were shipped more promptly, thus the railroad company found it possible to increase the supply of empty cars, remedying the condition of car shortage which had worried many of the large growers up to that time.

The Central Railroad of New Jersey put on special trains for peaches for the southern counties and improved their service where other lines connected with them in transfers.

The matter of classification of rates for perishables was taken up and a beginning made on a plan to reclassify. At some shipping points the crops have changed entirely during the past ten years, while the rate classifications remain the same.

The placing of cars so that they can be quickly unloaded at the terminals in Jersey City has received much attention, and further conferences on this matter with the officials have been arranged for.

The Adams Express Company has expressed its desire to improve its handling of eggs and milk from South Jersey points. During August every agent of this company, at points where eggs were shipped, received special instructions on handling them. Certain improvements also were secured in the transferring of eggs from Jersey City to New York. We have found that the use of second-hand egg crates and fillers is often responsible for breakage. Short-distance hauls in New Jersey entail as many transfers and just as hard usage as long hauls from distant states. Our poultry raisers should give this subject consideration. The master truckers in New York were consulted on such matters as switching and placing cars for unloading at the terminals, marking packages, etc. Everywhere we found a spirit of co-operation provided there was evidence of our desire to help and not merely to criticise.

EDUCATIONAL ACTIVITIES

Mr. C. D. Clark carried out a number of educational marketing exhibits. These were held in Newark, Atlantic City, Jersey City, Hoboken and at the annual meeting in Trenton and the Inter-State Fair.

Rumors of hoarding or destroying crops to maintain prices have been investigated. In the potato sections we found absolutely no evidence to substantiate such reports. Some crops are contracted for before harvest every year. Some growers, because of their labor arrangements or because of other reasons, harvest sooner or later. To take one instance out of the ordinary and from it build up a story of food-hoarding, not only is unjust to growers and dealers, but it tends to widen the breach between these factors in the food-supply business. There seems to be a strong need for promoting a new sense of relation between farmers and dealers. Apparently for years to come we will depend upon middlemen to distribute the food-stuffs of the nation. We are carrying on an educational campaign to improve this relation, and we look forward to a co-operative effort by growers and dealers for laws and trade customs which will protect the commission business from unscrupulous methods and build up a universal feeling of confidence in it.

Publications

Much of the work of the Bureau of Markets has been educational in character and we believe it must be so. Through a "Market News Service" we have supplied every newspaper in the state weekly news on marketing topics. This service includes seasonable notes on market products, items regarding market practices in and about the state and recipes for using crops in season. The recipes have been kindly furnished us by the home economics department of the State Agricultural College.

At the request of Governor Edge, the Department of Agriculture arranged for the securing of market reports through a number of the county farm demonstrators. Agents of the Bureau of Markets also took part so that each Thursday and Friday we were able to furnish the Governor wholesale and retail prices on from seven to ten products from 13 different cities and 9 farming communities. The newspapers gave these prices much publicity, and we believe they prevented dealers from securing too large a profit on these supplies.

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During the year Bulletin Number 7, "Modern Market Methods," and Circular Number 10, "Some Suggestions on the Establishment of Public Markets," were issued.

CO-OPERATIVE BUYING

In response to a persistent demand for help on the part of consumers in buying direct from producers, we sent out an outline of a plan for co-operative buying. The principles of this plan are that groups of consumers club their orders for certain staple products, order direct from farmers in wholesale quantities and pay cash. Since this plan was first given publicity, on September 1, the bureau has secured the co-operation of 110 farmers' and producers' associations, 8 creameries that have butter and cheese for sale, 14 mills where flour and corn meal can be secured, and 19 wholesale grocery houses. Seventy-five persons acting for large families, groups of families, factory employes, etc., have been furnished with some of the addresses of the above and we have actual reports of the purchase of many carloads of potatoes, and wagonloads of apples, cabbage, tomatoes, etc., as well as smaller shipments of many kinds of staple foods.

We realized that such a method of clubbing orders and buying co-operatively would be considered a novel and most unusual practice by housewives. Under the existing circumstances, it was the only practicable plan that occurred to us, and the success with which it has met in so many instances has convinced us that if conditions become more severe and sacrifices in other ways become necessary, this method of buying will prove popular.

DIRECT TRADING BETWEEN FARMERS IN FEEDING STUFFS

A plan is now in operation whereby farmers having hay or grain for sale can list it with the bureau in order to find a customer easily. The bureau is in touch with many large dairy and poultry farms and also horse owners, and considerable feed has been sold in this direct manner with an appreciable saving to both buyer and seller. This work was started October 15.

MEETINGS AND ADDRESSES

Various agricultural associations have invited members of the bureau to confer with them on particular subjects or to make addresses at their meetings. We have actively co-operated with the State Agricultural College and Experiment Station, the State Department of Labor, the State Chamber of Commerce, the State Federation of Women's Clubs, Governor Edge's Commission on the High Cost of Living, the State Dairy Association, the State Alfalfa Growers' Association, the State Horticultural Society and many others.

OUTLINE OF PLANS FOR 1918

The standardization of grades and packages seems to be a most important work. Little real progress can be accomplished in distribution unless preceded by a development in this line. It is to be regretted that methods of peach packing practiced in other states have been introduced into New Jersey which are not in keeping with sound business principles and the idea of standard grading. However, the recent horticultural advancement in New Jersey has been noted all over the country, particularly the packing of our peaches for market. We are confident that this progress will continue and that other states will eventually follow the high standards developed by the peach growers of New Jersey.

Potato grading and apple packing will probably be practiced more extensively another year. We hope to be in a position effectively to assist individuals and associations in practicing good grading methods. We are now planning some work on standard grades and packages for vegetables.

We believe that out of the public market movement will grow a system of cash selling without delivery by stores specializing in perishable products. It seems to be the only way such foods can be handled efficiently. Many city markets will doubtless be enlarged and improved and additional ones established. All this cannot fail to bring about a better understanding between city and country, producer and consumer; and surely this is worthy of our attention.

For genuine progress in marketing methods nothing helps growers to recognize their shortcomings as a selling organization of their own. We believe there are many opportunities for farmers' organizations where no actual selling is done, but where results may be obtained by insisting that certain methods be employed by the independent dealers. It has been proved that a farmers' association can change methods of

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buying, selling, paying and grading even though it does not do a dollar's worth of business. At the same time a growers' selling organization can be made to add much to a community. There is an increasing confidence in co-operative marketing, and the bureau will doubtless give much time to this work.

Our work in transportation improvement must depend upon the growers' carefulness in doing their part and prompt reports to us of any irregularities.

We do not sense a climax to any of the lines of work we have undertaken. At the start the bureau began its work with fundamental principles, and we know of no way of introducing really efficient methods in the distribution of farm products except by taking up one line of work after another as conditions or investigations suggest and persistently carrying them on. We have been much pleased with the support given us by growers, consumers, city authorities and dealers. By maintaining a spirit of fairness toward all and basing our work on sound principles, we look forward to some far-reaching and valuable results in the coming year.

REPORT OF THE SPECIALIST IN FARM MANAGEMENT

W. B. DURYEE

With the object of creating a more direct contact between the farms attached to the state institutions and the scientists at the State Agricultural College and the Experiment Station, the state specialist in farm management was appointed in March of the present year. The specialist is in the service of the Department of Agriculture and the division of extension at the State Agricultural College, having office facilities with the Department. The duties of the specialist are: first, to act as advisor to the manager in charge of the state institution farms regarding the conduct of individual farms; second, to call in the aid of the state specialists in the development of different crops or livestock projects, when desirable; third, to introduce better business methods of management and to co-ordinate the activities of all the farms so far as seems wise, in order that all the farms might be considered as a unified field of work.

Activities along this line were begun on March 15, 1917, and the first work taken up consisted in making a survey of all the farms which would show the total number of acres, the area in each crop, the number of inmates, and the livestock found necessary in each case to carry on the necessary farm operations. This survey showed the conditions existing at all of the state institutions which undertake the production of crops for the maintenance of its inmates or for sale. A summary of the crops and livestock will be found near the end of this report.

There are many state-owned institutions in New Jersey. If we exclude the two normal schools at Trenton and Montclair, the Soldiers' Home at Kearny, the State Prison, and the School for the Deaf at Trenton, which do not have farms attached, and the Agricultural Experiment Station, at New Brunswick, whose function it is to spend money judiciously for the benefit of agricultural science, we have the following institutions whose farms assist in greater or less degree in their maintenance:

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1. State Home for Boys, Jamesburg.....	500	acres
2. State Home for Girls, Trenton.....	86	"
3. State Hospital, Morris Plains.....	897	"
4. State Hospital, Trenton.....	275	"
5. Institution for Feeble-Minded, Vineland...	109	"
6. New Asylum Tract, Annandale.....	485	"
7. State Prison Farm, Leesburg.....	1,000	"
8. New Jersey Reformatory, Rahway.....	313	"
9. Reformatory for Women, Clinton.....	345	"
10. New Jersey Village for Epileptics, Skillman,	1,005	"
11. Sanatorium for Tuberculous Diseases, Glen Gardner	600	"
12. Manual Training and Industrial School, Bordentown	225	"
13. Burlington County Colony, New Lisbon...	3,000	"
14. Home for Disabled Soldiers, Sailors, Ma- rines and Their Wives, Vineland.....	12	"

A description of each farm is not permitted by the limits necessarily placed on reports of this character. This information, together with other data concerning the state institution farms, will be printed in a future bulletin of the Department of Agriculture.

IMPROVEMENT IN FARM MANAGEMENT

The survey of the state institution farms showed that some of the farms were being well managed and were producing crops that were all that could be expected. In other cases certain lines of improvement were indicated. The specialist in farm management wishes to acknowledge the hearty co-operation offered by the institution superintendents and the farm managers in carrying out certain lines of improvement which seemed advisable to all of us. The assistance of specialists at the State Agricultural College has been indispensable and we would mention especially the work of these men who have given their time and interest so that the scientific principles which they have studied might be demonstrated on the state farms. Acknowledgment is made to Mr. V. G. Aubry, extension specialist in poultry husbandry; Mr. R. W. DeBaun, specialist in market gardening; Mr. John W. Bartlett, specialist in dairy husbandry; Miss Fannie Cooper, of the home economics staff; Professor Frank App, agronomist, and Mr. J. B. R. Dickey, specialist in soil fertility and agronomy, who have advised in the farm management problem and in the preparation of maps of the state farms; to Professor F. C. Mink-

ler and Mr. J. M. Hunter, who have assisted in developing the swine departments at several institutions, and to Professor Carson, and later to Professor Regan, who have assisted in dairy problems.

The improvement of the state farms naturally divides itself into four main projects, namely:

1. Soil Fertility
2. Food Conservation
3. Livestock Development
4. Drainage

1. Soil Fertility

The soil of many of the state farms was found to be badly deficient in organic matter due, in some cases, to poor treatment before being acquired by the state. The lack of humus had been supplemented, in some cases, by the use of city manure, and many state institutions have been expending large sums of money for the purchase of this commodity annually. Manure is no doubt necessary for truck crops, but for general farm crops it has been demonstrated that cover crops, or leguminous field crops, make a very satisfactory substitute, and at a greatly reduced cost. There was also a need for the production of crops which are rich in protein so that the purchase of high-priced protein-carrying feeds might be eliminated so far as possible. Of the crops which furnish protein, and at the same time improve the fertility of the soil, there is none superior to alfalfa. The importance of greater areas in this crop has been brought to the attention of the institutions, with the result that there has been a large increase in alfalfa seeding during the late summer. The seedings of this crop were distributed as follows:

1. Village for Epileptics, 40 acres
2. State Home for Boys, 14 acres
3. Institution for Feeble-Minded, 6 acres
4. Sanatorium for Tuberculous Diseases, 6 acres
5. Manual Training and Industrial School, 4 acres
6. Women's Reformatory, 4 acres

This is a total of 74 acres, which is in addition to the 118 acres already growing on the farms. Doubtless, the acreage in alfalfa can be increased beyond this amount in succeeding years as its value for feeding purposes is demonstrated.

The soybean ranks second to alfalfa as a crop for silage, hay, and for improving the soil. The following areas of soybeans have been grown at these institution :

1. State Home for Boys, 20 acres
2. Village for Epileptics, 15 acres
3. Institution for Feeble-Minded, 14 acres
4. Women's Reformatory, 6 acres

This makes a total of 55 acres in the crop. The best results with soybeans were secured at the State Home for Boys where the beans were planted with a bean planter, and not over 25 pounds of seed used per acre. In many cases the beans reached a height of $4\frac{1}{2}$ feet, and as high as 140 pods were found to the plant. These beans were cultivated and fertilized with 300 pounds of acid phosphate per acre. Because of the possible difficulty in grinding this immense crop, 18 acres were cut and put into the silo with corn, at the same time, when the beans were glazed. It has been demonstrated that a mixture of soybeans at the rate of 1 ton of beans to 3 tons of corn makes silage which is a nearly balanced ration for dairy cows. The value of soybeans as silage has already been shown this year at this institution.

Tests of the value of lime and inoculation for this crop showed the importance of both, and the best results were secured from the limed and inoculated areas. The effect of lime was particularly noticeable in the dark green color, larger size of the vines, and the additional number of nodules on the roots. At the Institution for Feeble-Minded at Vineland, 14 acres were seeded to soybeans with a grain drill. Some of the holes in the drill were stopped up so that the seed was sown in rows sufficiently far apart for cultivation. Acid phosphate was used as a fertilizer. The land on which these were planted was extremely poor, having been donated to the institution by the owner for the purpose of food production. Most of the beans did well, but the extreme poverty of the soil and heavy rains prevented a very large yield. These were also put into the silo. At the Women's Reformatory the beans were planted in rows with a drill in a newly-planted apple orchard. Because of the pressure of other work they were not cultivated, but even so, made an excellent growth. A shortage of alfalfa hay, and the absence of a silo on this farm, made it desirable to make hay out of the beans. Fifteen acres of beans were planted broadcast at the Village for Epileptics. Heavy rains, and an abnormal growth of weeds, prevented these beans from developing sufficiently to make satisfactory silage or hay, and the crop was turned under for soil improvement.

As a result of this year's experience with soybeans we have reached the following conclusions. First, soybeans should be included as a valuable crop wherever the farms are of sufficient area to permit their growth. Second, lime is especially beneficial, although beans do well on soils that are somewhat acid. Third, inoculation with soil or commercial culture is desirable and is essential in most cases for best results. The beans make a fair growth without inoculation, but if they do not possess nodules the crop utilizes soil sources of nitrogen instead of getting it from the air, and this, of course, lowers the fertility of the soil instead of increasing it. Fourth, the beans may be utilized for silage without difficulty, no trouble having been experienced in shredding them with the corn. The variety used in all of these tests was the Wilson, and we believe that this variety is especially valuable for silage and seed purposes. If planted at the same time as corn it is ready to go into the silo at about the same date. It gives a large yield of seed and, having an erect growth, is easily cut for hay. Sufficient beans were allowed to mature to make seed for another year, and also for testing out their value as a protein food for swine and cows.

Cover Cropping

The great value of cover cropping has been established in past years, but for various reasons this practice has not been followed to the fullest extent on the state farms. A letter was sent to all of the state institutions advocating the use of cover crops, and this was supplemented by personal visits. Partly as a result of this campaign practically none of the land on the state farms will be bare this winter, and wherever they could be sown early enough, clover and other legumes were seeded. In order to provide for a future supply of seed for cover-crops which will be valuable as a source of organic nitrogen, we advocated the planting of a mixture of 45 pounds of rye and 30 pounds of vetch per acre. Five acres of this mixture have been seeded at each of the following institutions:

Village for Epileptics
State Home for Boys
Women's Reformatory
Manual Training and Industrial School

This crop will be allowed to grow until harvesting time, when the two plants will be bound and thrashed and the seed used for cover cropping next fall. Vetch is especially valuable as a nitrogen gatherer and is hardy in all parts of New Jersey. It is believed that the

growing of this cover crop will eliminate the need of purchasing city manure, except in special instances, within two or three years. This purchase of city manure has been an item of considerable cost to the state and its elimination represents a saving to the state.

In view of the shortage of food, special efforts were made by the farm managers to farm as large an acreage and as intensively as possible this year. The eradication of wide unsightly hedges along fences was carried out at the Manual Training and Industrial School, and at the State Home for Girls the lawn in front of the administration building was plowed and seeded to beans. Instances similar to this were evident at other institutions, and with the addition of the new farm at Annandale, approximately 520 acres more of land were farmed this year than in previous years.

2. Food Conservation

The necessity for conserving all sources of food has been fully realized and met so far as possible by the state institutions of New Jersey during the past season. The Department sent a letter to all the state institutions stating that we could secure the services of a member of the staff of the home economics department at the State Agricultural College for institutions desiring information regarding canning and drying, and for consultation regarding the purchase of the necessary equipment. The following institutions responded to this letter asking assistance and Miss Fannie Cooper has visited them several times giving instructions in modern methods of canning and drying:

New Jersey Reformatory
Reformatory for Women
Village for Epileptics
State Home for Boys
State Home for Girls
State Hospital, Trenton
Manual Training and Industrial School
Institution for Feeble-Minded

As a result of this campaign to eliminate waste, a report of these eight institutions shows a total of 29,801 quarts of fruits and vegetables canned and 4,904 quarts of jellies, preserves, etc. We believe that our efforts, which have met with hearty co-operation from the institutions, have resulted in the elimination of waste and loss of food-stuffs which have occurred in former years. Much remains to be done along this line. Suggestions regarding the purchase of suitable equip-

ment have been made to the institution and it is expected that next year each institution which has material for canning will have an up-to-date equipment so that all the produce raised may be used to advantage.

3. Livestock Development

The efficient and economical maintenance of the state's charges depends very largely upon the livestock departments on the state farms. A great deal of attention has been paid to the farm animal departments. For example, specialists in animal husbandry from the State Agricultural College have visited the following institutions:

Women's Reformatory
Village for Epileptics
Sanatorium for Tuberculous Diseases
State Hospital, Morris Plains
Institution for Feeble-Minded
Manual Training and Industrial School

These visits were made at the request of the superintendents or farm managers at the institutions. Advice regarding the mixing of rations, methods of feeding, and the installation of proper equipment were given by these specialists, and this advice has been followed out to the satisfaction of those in charge of the herds. The importance of milk for the use of inmates has led to the high development of dairies at the state institutions, and there are no better herds existing in the state than some of those maintained. Especial attention is called to the herds at the Village for Epileptics, State Hospital, Morris Plains, State Hospital, Trenton, State Home for Boys, Sanitarium for Tuberculous Diseases and the Institution for Feeble-Minded. The dairy departments, in fact, have been shown a great deal more attention than the departments devoted to pigs and poultry. Specialists in the production of swine visited the Manual Training and Industrial School, State Home for Boys, Village for Epileptics, Institution for Feeble-Minded and the State Prison Farm, for the purpose of reorganizing and developing this important industry. In each case we have recommended that forage crops be grown and the pigs allowed to range and feed on these. Some of the most valuable crops for this purpose have been found to be alfalfa, rape, soybeans and clover. When fed upon these crops the hogs are healthier and also make pork much cheaper than when confined and fed upon purchased grain. As the time for killing approaches they may be finished on corn. A valuable supplement to forage is a self-feeder which contains tankage, middlings and shelled

corn in separate compartments, and so arranged that the hogs have free access to it at any time. With the presence of fresh water, forage crops and a self-feeder, very little labor is necessary in taking care of the pigs, and this method has been demonstrated as a most economical method of producing pork. A self-feeder has just been installed at the State Home for Boys in one of the pasture lots and its value has already been shown. There has been a decided change for the better in the swine department at this institution. A considerable part of the feed of swine is derived from the garbage from the institutions, and when cooked this makes a valuable source of feed.

The poultry departments of many of the institutions do not show the evidences of care that are manifest in other departments. This is due, no doubt, to the lack of information regarding the newer methods of poultry keeping. We believe that a good flock of poultry may be made to show profit, and at the same time provide the institution with fresh eggs and a good supply of meat. A specialist in poultry husbandry from the State Agricultural College has visited these institutions:

Manual Training and Industrial School
State Home for Boys
Sanatorium for Tuberculous Diseases
State Hospital, Morris Plains
Institution for Feeble-Minded
Women's Reformatory
State Prison Farm
Village for Epileptics

Advice regarding the improvement of poultry establishments and information concerning the necessary equipment for hatching, brooding and feeding have been given. At the Institution for Feeble-Minded, Manual Training and Industrial School, State Home for Boys, and the Village for Epileptics, complete plans have been drawn for the establishment of model poultry plants. These can be constructed without great expense, and it is expected that the coming year will show a decided improvement in this important animal industry department.

4. Drainage of Farm Lands

The state farms at Jamesburg, Glen Gardner, Bordentown and Skillman have certain fields which are not able to produce to the fullest extent because of the presence of surplus water which interferes with crop production, especially in a wet season. In order to correct this condition in a scientific and accurate method, the services of an expert

drainage engineer were secured from the United States Department of Agriculture at Washington. This engineer spent a week in New Jersey visiting the above-named farms. Maps have been made of the fields which needed drainage and the location of the drains, the proper depth, the proper size of tile, and the number of drains required, are specified. A complete statement of the cost of installing these drains, together with the amount of material required, is also furnished so that provision may be made in the budget of each institution for the exact sum needed to improve these fields. As a result of this work it is probable that approximately 100 acres of land will be brought into better production. During the coming year it is expected that the directions given will be followed out, and, as the necessity arises, further surveys will be made of the state lands which are prevented from yielding their best because of excessive moisture.

FARM MAPS

In planning a system of farm management for the land at each institution it is essential that a map showing the type of soil, fields, streams, buildings, drains, etc., be in the hands of the farm manager and this Department. Such a map can be prepared for each year's crops in advance, thus permitting a rational system of agriculture and also preventing the complete disturbance of these plans by a change in the management of the farm. Maps have been prepared of the farms at the Institution for Feeble-Minded, Sanatorium for Tuberculous Diseases, Women's Reformatory, State Home for Boys, Manual Training and Industrial School and the Home for Disabled Soldiers. The work has been done under the supervision of Mr. J. B. R. Dickey, specialist in soil fertility at the State College. These are plane-table tracings, and blue prints have been made of the tracings and distributed to the institutions concerned. Location of the institution buildings, the acreage of each field, the location of the drains, and the crops as they are to be planted are shown on these prints, making a permanent record of the farm operations for the current year.

FARM ACCOUNTS

In view of the fact that the state farms are being operated as one state project, it would seem advisable that a system of accounts be kept which would be uniform, that it might be possible to show the returns from each farm, and also make it feasible to determine how improvements might be made in the management of such institutions as are

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not producing as much as some others. A system of farm accounts which comprises an inventory for all real estate, livestock and equipment, an account of each farm project, and labor accounts, has been prepared; and it is probable that at least part of this system will be utilized this year on the state farms. No system of accounts of any kind will be used which does not meet with the full approval of those in charge of the state farms, and these accounts must be as simple as efficiency will permit.

UNIFORM FERTILIZER FORMULAS

A uniform series of fertilizers to meet conditions on all the state farms has been prepared, and these, having met with the approval of the farm managers and superintendents in conference with Secretary Agee, will be used on all the state farms the coming year. The formulas and quantities will be decided upon at a conference in the near future.

This standardization of fertilizer formulas will enable the supply to be bought by the state purchasing agent and should result in large saving to the state.

FEED STANDARDIZATION

The same standardization which has been attempted with fertilizers will be carried out with feeds for dairies, swine and poultry. Some institutional farms have been using commercial feed mixtures which have been fairly satisfactory in many cases, but which have cost more than if the ingredients were purchased separately and mixed at the institutions. The dairy department at the Experiment Station will suggest formulas for dairy feeds which will apply to all conditions of feeding. This method will provide for the purchase of feeds for several months in advance and should result, not only in considerable saving to the state, but also in greater efficiency in feeding the farm animals. The purchase of feeds under this system will probably be undertaken by the State Purchasing Department as soon as the market adjusts itself after the present corn crop is harvested.

THE METHOD OF SUPPLYING LIME

In view of the shortage and high prices of commercial fertilizers which confronts us, and in order to make soil conditions favorable for heavy crops, it is necessary to use large quantities of lime. A survey of all the state farms shows that a total of 1,100 tons of ground lime-

stone will be required during the coming year. We recommended to the State House Commission early in the year that a pulverizer be purchased and installed at the farm at Annandale where there are extensive deposits of good dolomitic limestone. We are pleased to report that the wisdom of this course has been realized by the Commission and a pulverizer has been purchased. The power will be secured from a 10-20 tractor which has been given to the farm, and the labor will be performed by the inmates at the New Jersey Reformatory, who have been working the Annandale farm this year. This method of supplying lime has the following advantages:

1. The saving of a large portion of the money now expended for lime.
2. The preparation of limestone of exceeding fineness so that evenness of application and efficiency is secured by machinery instead of the former laborious method in vogue at some institutions of spreading slaked stone lime by hand.
3. The utilization of inmate labor during the winter in productive channels.
4. The existence of a large supply of lime to be secured by any institution for the cost of production and freight will result in an increased use of this necessary ingredient of all fertile soils and there will be a consequent increase in crop production.

GOOD SEED

Especial effort has been made this year to secure field and grass seeds of the highest quality. In many cases the use of low-grade seed has resulted in poor crops and the introduction of noxious weeds. Practically all the alfalfa seed used this year has been secured, upon our recommendation, from the New Jersey Alfalfa Association, which derived its supply direct from the western seed growers. The only alfalfa seed used was that which have been proved to be adapted to this climate.

UNIFORM PRICE FIXING

Institutional farms have been in a habit of making a report to the state comptroller regarding the quantity of all kinds of produce which they have raised during the growing season. Values on this produce have been placed by each institution, and therefore the prices are not uniform. Some institutions have had difficulty in finding the market price, some have set wholesale prices, while others have been using re-

tail prices. In a number of cases the institution farms have produced quantities of produce which can be used at other institutions for feeding the inmates and for seed purposes. The other institutions, however, have not been aware of these supplies and they have been sold on the open market. At the same time when these supplies were needed, each institution had to go on the open market for these same articles through the State Purchasing Department, and probably could not get as good material as might have been secured from another state farm. In order to correct these conditions a Produce Price Fixing Committee has been appointed, consisting of Dr. David F. Weeks, superintendent of the Village for Epileptics, as chairman; E. E. Grosscup, state purchasing agent; J. J. Nevin, representing the comptroller's office; and W. B. Duryee, of the Department of Agriculture. At the request of this committee the last named has prepared a form for reporting the weekly returns from each institution farm and the values will be set according to the market during that period. This will enable the making of a fair comparison between institutions and will show what products are available for interchange at certain institutions. The committee also passes upon the requests from institutions that the sale of certain products be allowed and that these be sold in the open market unless they are needed by some other institution.

SYSTEM OF CO-OPERATION

Shortly after beginning work the specialist in farm management began the issue of a four or five-page mimeographed letter which contains information regarding the activities of the various institutions and calls attention to certain methods in vogue at some institution farms which have a direct bearing upon the work at other farms. This bulletin, which is issued monthly, also contains information regarding timely agricultural topics, such as cover crops, spray mixtures for fruit trees, and other information which is worthy of attention at certain times of the year. The bulletin is issued by the Department of Agriculture and sent to superintendents of the institutions, farm managers, the Experiment Station staff, certain department heads who are concerned with the state farms, and a number of members of the boards of control of the various institutions who are interested in farm operations. The bulletin has met with a very gratifying reception and its publication will be continued as long as its profit is apparent. The publication of this bulletin has had a very decided effect upon the superintendents and others connected with the institution farms by showing that each farm is part of a state system, and it has aroused interest in working together for the state's benefit.

Plans are already under way for the holding of monthly conferences of those in charge of the state farms during the winter, and these will be held in Trenton, at the State House. These conferences will be addressed by men who are specialists in all branches of agriculture, and, besides imparting valuable information, they will further the spirit of co-operation among the state institution officials by the discussion of problems of mutual interest. A great deal can be accomplished by appealing to this spirit of co-operation and by stimulating the interest of each institution in the work of the others. The State Farm Bulletin and the winter conferences will serve to develop this friendly interest.

Reports regarding the progress made with the state institution farms, and the recommendations which we have had to make from time to time, have been sent to the State House Commission. These reports have received the consideration of the Commission and have served to keep the activities of the farms and their needs before the governing power of the state. Acknowledgement of the services rendered has been made by the State House Commission.

Since beginning the work with the state institutions the specialist in farm management has made a total of 121 visits to the institution farms. The records show that an equal number of visits has not been made to each institution, but the visits have been distributed according to the need for assistance in farm management and the development of certain projects.

The food prices make it absolutely essential that all the available state-owned land be cropped to the fullest extent the coming year. Careful studies are now being made of the food requirements of the 14,000 persons in the care of the state, and our object is to make the state institutions as nearly self-sustaining as possible. The result of these studies will be published in a bulletin now being prepared, together with data concerning our institution farms which it is not possible to set forth in this limited report.

The fact that New Jersey spends nearly half her total revenues in the maintenance and care of the institutions above described, together with the food shortage, makes this work of great importance to the people of the state.

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NEW JERSEY INSTITUTION FARMS

Summary

INSTITUTION.	LOCATION.	Approximate Number of Inmates.	Total Acreage.
1. State Home for Boys.....	Jamesburg	600	500
2. State Home for Girls.....	Trenton	240	86
3. State Hospital	Morris Plains..	2,600	897
4. State Hospital	Trenton	600	275
5. Institution for Feeble-Minded.....	Vineland	400	109
6. New Asylum Tract.....	Annandale ....	....	485
7. State Prison Farm.....	Leesburg	150	1,000
8. New Jersey Reformatory.....	Rahway	500	313
9. Reformatory for Women.....	Clinton	100	345
10. Village for Epileptics.....	Skillman	700	1,005
11. Sanatorium for Tuberculous Diseases...	Glen Gardner..	275	600
12. Manual Training and Industrial School...	Bordentown ...	150 students	225
13. Burlington County Colony.....	New Lisbon....	45	3,000
14. Home for Disabled Soldiers, Sailors, Marines and Their Wives.....	Vineland	400	12
Total for All Institutions.....		6,760	8,852

Livestock on the State Farms

	Cows of milking age.	Young stock.	Breed.	Steers.	Hogs of breeding age.	Pigs.	Breed.	Sheep.	Breed.	Laying hens.	Young stock.	Breed.	Total.
ESBURG Boys' Home.....	40	22	Guernsey	21	8	53	Mixed	....	....	211	100	Barred Rock	455
ELAND Feeble-Minded	32	14	Holstein	.....	28	100	Chester White	....	....	175	36	White Leghorn	385
ELAND Soldiers' Home.....	....	....	.....	.....	....	....	.....	....	....	100	....	Barred Rock	100
NTON Reformatory	17	10	Holstein	.....	5	35	Grade	20	.....	320	500	Leghorn	907
WYWAY Reformatory	39	11	Holstein	.....	2	64	Jersey Reds	....	....	170	600	Barred Rock Leghorn	1062
SBURG Prison Farm.....	8	3	Holstein	.....	11	86	Mixed	....	....	70	....	Barred Rock	178
ELMAN Epileptics	66	72	Holstein	.....	1	18	121 Chester White	....	....	350	500	Barred Rock	1128
NTON Girls' Home.....	....	....	.....	.....	8	63	Chester White Berkshire	....	....	304	606	Leghorn	981
NTON State Hospital....	88	60	Holstein	.....	28	270	Mixed	....	....	100	200	Mixed	746
RIS PLAINS State Hospital....	117	17	Mixed	.....	25	276	Mixed	66	.....	636	2100	Leghorn White Rock	3237
N GARDNER Sanatorium	50	12	Holstein	.....	25	108	Mixed	....	....	150	200	Mixed	545
DENTOWN Industrial School..	13	7	Holstein	.....	11	24	Berkshire Jersey Reds	....	....	140	300	Leghorn Rhode Island Reds Barred Rock	495
ANDALE New Asylum.....	4	5	.....	2 oxen	....	9	.....	....	....	22	123	Barred Rock	165
Total.....	474	233	.....	26	231	1321	.....	86	.....	2748	5265	.....	10384

Acreage of Crops on the State Farms

	Field corn.	Silage corn.	Potatoes.	Truck.	Alfalfa.	Wheat.	Rye.	Hay.	Oat and pea hay.	Oats.	Buckwheat.	Soybeans.	Navy beans.	Peaches.	Apples.	Totals.
ESBURG																
ys' Home	80	45	45	35	20	20	.....	160	.....	25	.....	20	.....	4	20	474
LAND																
le-Minded	6	13½	11	26	.....	.....	8	.....	.....	.....	.....	14	.....	1½	1	71
TON																
formatory	20	.....	6	8	2½	34	.....	30	12	14	.....	6	1½	3	5	142
WAY																
formatory	60	15	4	25	8	14	45	75	20	12	.....	.....	.....	.....	.....	278
SBURG																
ison Farm	20	.....	21	.....	6	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	53
LMAN																
ileptics	47	56	35	40	34	99	21	165	40	.....	.....	15	6	10	34	602
NTON																
irls' Home	30	.....	5½	10	.....	6	.....	5	.....	1½	.....	.....	.....	1½	1	60½
NTON																
ate Hospital .....	.....	55	32	38	25	40	.....	40	.....	.....	.....	.....	.....	.....	2	232
RIS PLAINS																
ate Hospital	4	68	5	62	10	.....	30	82	7½	.....	.....	.....	.....	.....	12	280½
N GARDNER																
anatorium	35	40	2	16	8	.....	10	25	.....	.....	.....	.....	.....	4	1	141
DENTOWN																
Industrial School.....	35	.....	9	9	4½	5	3	15	5	.....	.....	.....	2	8	5	100½
ANDALE																
ew Asylum	186	.....	7	5	.....	30	.....	45	.....	41	25	.....	35	.....	5	379
ELAND																
oldiers' Home .....	.....	.....	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12
Total.....	323	292½	194½	274	118	248	117	648	84½	93½	25	55	44½	32	86	2825½

CORRESPONDENCE AND PUBLICITY

Besides his work with the state farms, the specialist in farm management has been handling a large amount of correspondence which has come in great volume from all parts of New Jersey. The food crisis, and the necessity for the cultivation of all land, together with the various pleas for production and conservation, have resulted in the Department's receiving a great deal of mail daily requesting information on every conceivable subject. This correspondence has been handled promptly and we hope with satisfaction to those who have written to us.

In addition to the letters on specific subjects, we have received samples of soil from farms and gardens with requests for information concerning the treatment of the soil represented by these samples so that best results may be obtained. These samples have been tested for the lime-requirement, and information based upon the chemical composition and condition of the soil has been given.

The publicity matter of the Department also has been taken care of by the specialist in farm management. With the issue of each bulletin and circular a notice has been given to the newspapers of the state giving, in concise form, the contents of the publication and stating when the bulletins may be secured if further information is desired. Responses to this work have been very large, showing that these bulletins fill a real need in the life of thousands of people of the state. Bulletins and circulars are sent upon request, in addition to a large mailing list whereby 10,000 copies of our bulletins are sent to interested people in all parts of the state. Publicity matter regarding our work also has been issued at intervals to the newspapers, and this has served to keep the general public in touch with the manifold activities of the Department of Agriculture.

REPORT OF THE BUREAU OF STATISTICS AND INSPECTION

FRANKLIN DYE, CHIEF

The work of this bureau may be divided into three groups—(1) the statistical work; (2) the nursery stock inspection work and (3) the bee inspection work.

The statistical work covers the collection of agricultural statistics and the publication of a monthly crop report dealing with the conditions of various crops and other agricultural matters. This work was started in May and owing to the fact that a full year has not elapsed, a complete and final report cannot be presented at this time.

The nursery stock inspection work includes the inspection of growing stock in nurseries, of stock received from foreign countries, and of stock shipped into New Jersey from other states. This branch of the service also includes matters relating to quarantines and to the control of insect and plant disease outbreaks.

The bee inspection work is for the purpose of suppressing serious diseases of honey-bees in order that bee-keeping may take its proper place among the other agricultural interests of the state and includes the inspection of apiaries, law enforcement against bee diseases, and the establishment of demonstration yards.

These three phases of the bureau work are fully treated in the following reports. Each report is complete in itself and covers organization, methods, results and recommendations. The report of the nursery inspection work covers the activities of Dr. T. J. Headlee, state entomologist; Dr. Mel. T. Cook, state plant pathologist; Mr. Harry B. Weiss, chief inspector, and the inspectors employed by the bureau. Mr. Weiss' connection with the statistical service is shown in the report on statistics. The management of the bee disease control work was left directly in the hands of the state entomologist and the results are recorded in the report on bee inspection, by Dr. T. J. Headlee and Mr. E. G. Carr.

RECOMMENDATIONS

The constantly increasing demands for inspection, and the very great importance of this work to all the people of the state, justify the hope that in the near future provision may be made for additional plant inspectors as conditions may demand.

Statistics to be of highest value should be as comprehensive as possible, covering, in the case of fruit, the number of apple, peach and pear trees in all commercial orchards, and in the case of market-garden crops, the acreage devoted to each crop in all centers where this business is of commercial importance; and we respectfully suggest that the bureau undertake such a census in the near future. We believe the expense would not be large. With such a census record, the several centers of production could be indicated on a state map, which would also be valuable for reference.

The law seems to require the publication of information relating to farm lands for sale in this state. In Circular No. 1, issued in December, 1916, 51 farms were advertised. There has been a regular demand for this circular. Whether farms have been sold through this means we do not know, as persons advertising have not advised us of sales made, if any. Whether this is or is not the case, the circular answers a valuable purpose in supplying the demand for such information, thus obviating the necessity, which otherwise would exist, of writing long descriptive letters to all who ask for such information. As the first edition of this circular is now about used up, we respectfully recommend that a second edition be prepared and printed for the reasons given. It should be revised and perhaps somewhat enlarged.

As soon as possible after the final reports for the year are received the bureau will prepare a full and complete list of the agricultural products of the state, covering acreage, yield per acre, total yield, price and total value.

REPORT OF STATISTICAL SERVICE

HARRY B. WEISS, CHIEF INSPECTOR

SUMMARY

A voluntary crop reporting system has been organized.

The organization of this work has enabled the Department to answer in a satisfactory manner questions relating to statistics and estimates of New Jersey crops.

A crop report has been issued every month, beginning with May, 1917.

These reports have been issued as soon after the first of the month as possible, and have included the conditions of crops during the growing seasons and other agricultural items of general interest. Plans have been made to enlarge these reports and make them cover a wider field of usefulness.

THE ORIGIN AND WORK IN NEW JERSEY

The law creating the Department of Agriculture made provision for a Bureau of Statistics and Inspection, and in Section 13 states that the Board "shall have power to investigate, ascertain and publish information and statistics relating to the promotion of agriculture and the advancement of agricultural interests in the various branches thereof."

It was decided that the agricultural interests of the state could best be served along such lines by publishing a crop report during the growing and such other seasons as were necessary and advisable. Owing to our small force and the pressure of other bureau work, it was not possible to issue our first report until May, 1917. Since then they have been issued regularly during the first week of every month and will be continued as occasion demands. Beginning with planting, information was gathered and reports published concerning the condition of the principal agricultural products of the state. As the season progressed, various crop conditions were noted each month, and expressed in terms of percentage, 100 being taken as a normal condition. On account of being handicapped by a lack of acreage figures of our own, the reports in the past have not included estimated forecasts of production, but as time goes on we hope to arrive at a satisfactory basis for making such estimates. In addition, our past reports contained brief items relating to farm labor, insect and plant disease outbreaks, and other remarks of general agricultural interest.

On account of the diversified nature of New Jersey's agricultural interests, it is no easy task to gather reliable information for every crop, and so only the important ones will be considered until our force is large enough to cover a wider field.

ORGANIZATION AND METHODS

At the present time the agricultural section of the state is covered by 250 crop reporters, who report once each month. These men, who have a broad grasp on agricultural affairs in their localities, and in many cases in their counties, very generously donate their services to this work.

In addition to the reports of voluntary crop correspondents, reports are received from the county farm demonstrators, and from such other sources as are necessary and advisable. At various times, special reports are received by our inspectors from men known to have a wide and accurate knowledge of certain crops. The reports received by the bureau from these various sources are tabulated and compiled on the third day of each month. After the reports from the counties are tabulated a weighted figure for the entire state is arrived at by taking into consideration the value which the total acreage of each county bears to the total acreage of the state. The weight figure showing the value of the county is applied to the acreage or condition, whichever it might be, and in this manner a final figure for the state is arrived at. Very often it is necessary to take other factors into consideration, for example, the weather.

THE "NORMAL" AS A BASIS OF CONDITION

The advantage of using the term "normal" is based on the idea that it represents a conception which is uniform in the mind of the practical farmer. When a farmer sows seed in the spring he has in mind just what the field should yield if the season is favorable. This expected yield is a full, or normal, crop such as he has harvested in the past under favorable conditions. It is not the bumper crop which occurs rarely. It is not the small crop which occurs under adverse conditions. Neither is it the so-called average crop. It is rather the average of a series of good crops. This expected yield at planting time, or the full crop, or the average of a series of good crops, is the "normal," or standard, used by this bureau in its report and is represented by 100.

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FUTURE PLANS AND NEEDS

As has been stated before, the bureau has seriously felt the lack of reliable acreage figures of its own. This is especially true of fruit, truck and market-garden crops. The only way to get this information is to send out agents or inspectors capable of getting the major part and estimating the remainder. Only in this way can the extent and scope of such industries be arrived at. Only in this way is it possible to obtain relatively accurate information about such resources of the state. For example, information is needed concerning the commercial fruit interests of New Jersey and this can be obtained only by surveys of certain portions of the state. The same is true of certain other crops.

As our crop-reporting organization grows, we are planning to enlarge our monthly crop reports and make them more useful. Having no previous figures of our own for comparison, our first series of reports were necessarily brief. As time goes on, however, we are accumulating such figures, and future reports will contain such as are needed for comparative purposes.

REPORT OF INSPECTION SERVICE

PLANT INSPECTION

THOMAS J. HEADLEE, PH.D., STATE ENTOMOLOGIST

MEL. T. COOK, PH.D., STATE PLANT PATHOLOGIST

HARRY B. WEISS, CHIEF INSPECTOR

SUMMARY

One hundred and sixty-five nurseries have been inspected and 152 certified as free from dangerously injurious pests. Thirty-two special inspections were made and certificates issued.

Six thousand five hundred and sixty-one cases of nursery stock from Europe, Asia and South America were inspected and 31 species of pests found and removed. Seven hundred and sixty-six cases and 13 carloads of nursery stock from other states were inspected and 74 violations of our crop pest laws dealt with by the destruction of infested stock.

In co-operation with the Pequannock Township Committee (Morris County) the bureau started and carried through a law-enforcement campaign against the tent caterpillar, resulting in complete control of the pest.

On April 16, 1917, a quarantine was established against certain states where the white pine blister rust is known to exist.

A Japanese beetle, recognized as a seriously injurious insect, was discovered in Burlington County, and the bureau, in co-operation with the United States Bureau of Entomology, is working on plans for its extermination.

Attention is called to a new insect on bay trees in New Jersey, to the European mole cricket which still continues its activities, to raspberry yellows as a new disease in the state, and to the lilac canker and poplar blight.

The state has been thoroughly inspected for the white pine blister rust, but very little infestation was found. In 1916, a total of 67 diseased pines were discovered, and this year the number was reduced to 15. No new places were found to be infected. Infected blocks in New Jersey are still under quarantine.

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ORGANIZATION

Prior to July 1, 1916, the inspection work was carried on by the state entomologist and the state plant pathologist. The state entomologist, under Chapter 249, Laws of New Jersey, 1903, was concerned with the inspection of nurseries, of nursery stock shipped into New Jersey from foreign countries and other states, and with the investigation and settlement of complaints about injurious insects which might spread from infested plants to others on public highways or on adjoining lands; while under Chapter 54, Laws of New Jersey, 1911, the state plant pathologist was charged with similar duties in order to prevent the spread and introduction of dangerous plant diseases.

On July 1, 1916, however, the law enacted by the Legislature during the winter of 1915 establishing a Department of Agriculture became effective, and the inspection work was transferred to a Bureau of Statistics and Inspection operating within the Department. Under this new arrangement, a greater degree of efficiency has been made possible, the inspections formerly made independently under the direction of the state entomologist and state plant pathologist now being carried out by a chief inspector. In this manner the duplication of work has been avoided and more work has been accomplished with the same number of men. In order to facilitate the work, a board, consisting of the chief of the bureau, the state entomologist and the state plant pathologist, meets once each month, at which times the chief inspector reports and various phases of the work are discussed and future policies decided upon.

CO-OPERATION

Mention should be made of the co-operation between this bureau and the New Jersey Agricultural Experiment Stations, and also between the bureau and the United States Department of Agriculture. It is frequently impossible to diagnose plant diseases and insects without several days' laboratory study and the above organizations have rendered valuable help whenever called upon.

INSPECTION

It is possible to divide this work into three kinds—(1) the inspection of growing stock in the nurseries; (2) the inspection of stock imported into New Jersey from abroad, and (3) the inspection of

stock received from other states. Growing stock in nurseries is inspected for the purpose of preventing the distribution of injurious insects and plant diseases which might be present in the nursery. The actual work entails considerable labor and knowledge, and is carried on during July, August and September. The inspection of imported stock is for the purpose of preventing the introduction of injurious insects not already established in New Jersey. There are still many species in foreign countries which might become serious menaces if introduced into New Jersey and allowed to develop unchecked in favorable surroundings, and imported nursery stock is undoubtedly a great source of danger.

Stock from other states is inspected to prevent unlimited distribution of such pests as San José scale, crown gall, blight, anthracnose and such other pests as it is likely to carry. This work, together with the foreign stock inspection, is carried on during the fall and spring.

NURSERY INSPECTION

During the past summer 165 nurseries were inspected and a number of dealers visited for the purpose of finding out if they had any left-over stock on hand. The San José scale, oyster shell scale, boxwood leaf miner and crown gall still continue as important nursery pests, with many others of lesser importance following.

Up to the present time 182 certificates have been issued, thirty of which were given to dealers after they submitted satisfactory statements concerning the firms from which they expected to purchase stock. Forty-three certificates are still to be issued, these certificates being held up until the firms in question have complied with our requests for the destruction or spraying of infested stock, or until the dealers have filed satisfactory agreements.

Owing to the lessened demand for peach stock in Hunterdon county, 9 peach nurserymen in that section will go out of business next year, after disposing of their spring stock. In the Hammonton section, 10 berry nurserymen have stated that they will not need certificates for the 1917-1918 shipping seasons.

SPECIAL INSPECTIONS

During the past year 32 special certificates were issued to various citizens of the state enabling them to ship, under our inspection laws, such stock as boxwood, fruit trees, berry plants, roses and other ornamentals.

A list of nursery firms holding certificates of the bureau will appear in a future circular of the Department.

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STOCK FROM FOREIGN COUNTRIES

Foreign stock imported into New Jersey from November 1, 1916, to November 1, 1917:

<i>Country</i>	<i>Character of Stock</i>	<i>Shipments</i>	<i>Cases</i>
Scotland	Roses, fruit trees.....	5	52
Australia.....	Palm seeds	2	16
Trinidad.....	Dracena canes	11	33
Canada.....	Fruit trees	1	50
Brazil.....	Orchids	21	132
France.....	Roses, lilacs, shrubs, etc.....	30	127
Denmark.....	Lilacs	4	40
Ireland.....	Roses	33	79
U. S. Colombia.....	Orchids	27	790
Japan.....	Wistaria, ornamentals, etc....	37	239
England.....	Orchids, roses, fruit.....	81	482
Belgium.....	Azaleas, palms, bay trees, aspidistra, araucarias, etc.....	101	1,738
Holland.....	Rhododendrons, boxwood, lilacs, roses, azaleas, shade trees, trained fruit trees, aucubas, palms, etc.....	191	2,578
Cuba.....	Dracena canes	1	2
Mexico.....	Orchids	8	12
Venezuela.....	Orchids	14	160
Philippine Islands...	Orchids	2	9
Guatemala.....	Orchids	1	4
Costa Rica.....	Orchids	3	18
Totals		573	6,561

Three hundred and forty-eight shipments, consisting of 4,883 cases, were received from November 1, 1916, to January 31, 1917. From February 1 to July 1, 1917, 178 shipments, consisting of 1,201 cases, were shipped into the state, the balance of the above totals being received from July 1 to November 1, 1917. All of the above stock was inspected with the exception of 246 cases from United States Colombia, 73 cases from Venezuela and 15 cases from Costa Rica. This stock, consisting of orchids, was inspected by the Federal Horticultural Board at New York City, before being shipped to New Jersey.

A detailed statement of the pests intercepted on foreign stock will appear in the department circulars.

STOCK FROM OTHER STATES

Stock shipped into New Jersey from other states from November 1, 1916, to November 1, 1917 (according to notices received from transportation companies):

	<i>Express shipments</i>	<i>Freight shipments</i>	<i>Carloads</i>	<i>Parcel post</i>	<i>Total</i>
Alabama		7			7
Connecticut	25	83	1		109
California	2				2
Delaware	6	34			40
Florida	1	2			3
Illinois	3	7			10
Indiana		5			5
Iowa	8	1			9
Kansas	1	2			3
Kentucky	1	1			2
Maryland	29	174	2		205
Massachusetts	3	17	2		22
Michigan	3	2			5
Missouri	50	46		348	444
New Hampshire	1				1
Nebraska	5	2			7
New York	293	411	3		707
Ohio	8	24			32
Pennsylvania	39	238	4		281
Vermont		6			6
Rhode Island	1	3			4
Tennessee	3	3	1		7
Georgia	2				2
North Carolina	1				1
Texas	1				1
Totals	486	1,068	13	348	1,915

Six hundred and twenty-eight freight shipments and 413 express shipments were received during the spring of 1917; the balance, 440 freight shipments and 73 express packages, being received during the fall of 1916.

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DOMESTIC STOCK INSPECTED DURING FALL OF 1916

<i>State</i>	<i>No. shipments</i>	<i>No. cases</i>	<i>Contents</i>
Missouri	6	6	Fruit stock
Alabama	3	3	Fruit stock
Tennessee	1	1	Ornamental
Massachusetts	8	15	Ornamental
Delaware	10	17	Fruit stock
Ohio	12	64	Berry stock, roses
Maryland	27	44	Fruit and berry stock
Florida	1	1	Ornamental
Indiana	1	1	Fruit stock
Illinois	1	1	Fruit stock
Connecticut	23	30	Fruit stock
Pennsylvania	42	106	Fruit stock
New York	76	149	Fruit stock
Totals	211	438	

DOMESTIC STOCK INSPECTED DURING SPRING OF 1917

(February 1, 1917, to July 1, 1917)

<i>State</i>	<i>Freight shipments</i>	<i>Cases</i>	<i>Carloads</i>
New York	80	109	3
Maryland	39	57	2
Pennsylvania	32	58	4
Connecticut	21	22	1
Missouri	11	11	
Delaware	8	13	
Ohio	7	21	
Massachusetts	7	8	2
Virginia	3	4	
Tennessee	3	2	1
Rhode Island	2	4	
Alabama	3	3	
Georgia	2	2	
North Carolina	1	4	
Iowa	1	1	
Michigan	1	1	
Illinois	1	4	
Texas	1	1	
Indiana	1	3	
Totals	224	328	13

Stock found infested by crown gall, San José scale, woolly aphis and other injurious pests is destroyed wherever found, and at the end of the season a statement is sent to the chief inspector of every state where the infested stock originated, notifying him of the firms violating our inspection requirements. In most cases these officials are willing to co-operate and help bring about conditions which tend to insure clean future shipments.

SPECIAL INSPECTION WORK

Tent-Caterpillar Control

The bureau, in co-operation with the Pequannock Township Committee (Morris County), served all property owners and tenants in the township early in the spring of 1917 with a legal notice requiring them to destroy all nests of the tent-caterpillar within 8 days. This was brought about by a request for help in combating this pest by the Township Committee. Dr. T. J. Headlee, state entomologist, met the committee and suggested the following plan: first, that the New Jersey pest law should be used as the legal foundation for action; second, that the Township Committee should notify each property owner and tenant of the proposed action against the tent-caterpillar; third, that the Township Committee should give publicity to the affair; fourth, that the state entomologist would have a preliminary survey made and furnish an inspector to serve the notices and make reinspections; fifth, that the legal treatment of persons failing to comply with the order would be undertaken by the state entomologist.

This plan was followed and a preliminary survey of the township was made by Mr. Walters.

About the first of May, Mr. Walters served the notices, amounting to 260 in all. About ten days later a reinspection was made and it was found that all but three or four had obeyed the order. These few had their attention called to the matter and finally cleaned out the nests. This is the first time that our pest law has been used for such a purpose and demonstrates its possibilities, when used together with publicity, public sentiment and co-operation.

Below is a copy of the abatement order :

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NEW JERSEY DEPARTMENT OF AGRICULTURE

Office of State Entomologist, New Brunswick, N. J.

To

Sir (or Madam) :

You are hereby notified that there now exists upon the lands owned or occupied by you at _____ in the County of Morris, an infestation of the tent-caterpillar (*Malacosoma americana*) upon trees growing upon your said lands, which insects might spread from the trees infested to others on the public highways or upon lands adjoining or belonging to others, which infestation constitutes a nuisance under Section 1 of Chapter 249 of the Laws of 1903, and I hereby order that the said nuisance be abated by you within eight days from the service of this order upon you, under penalty of fifty dollars fine.

Hereto attached and making part of this order, is a direction pointing out the methods to be taken to abate the said nuisance.

THOMAS J. HEADLEE,
State Entomologist.

Dated _____ 1917.

Directions for destroying the nests of the tent-caterpillar: Burn the nests with a torch while the caterpillars are in them, or wipe out the nests with a broom or brush crushing the caterpillars.

QUARANTINES

On April 16, 1917, the following quarantine was established for the purpose of preventing the introduction of the white pine blister rust into the state:

DEPARTMENT OF AGRICULTURE

State of New Jersey

TRENTON, N. J., April 16, 1917.

Whereas, a dangerously injurious disease known as the White Pine Blister Rust caused by a fungous parasite known as *Peridermium strobil*, is known to exist in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Pennsylvania, New York, Minnesota and Wisconsin, therefore, I, Alva Agee, as Secretary

for Agriculture of the State of New Jersey, by virtue of the power conferred upon me by Chapter 268, Laws of 1916, State of New Jersey, hereby forbid the bringing into the State of New Jersey any white pine trees of any size or age, or any other five-needle pines or others bearing needles in bundles of five each from either or any of the above-mentioned states. This order shall take effect on the date hereof and remain in full force and effect until further order.

ALVA AGEE,
Secretary for Agriculture.

Any shipments of prohibited pines brought into the state in violation of this quarantine are subject to seizure, destruction or reshipment to the consignee.

This quarantine was later amended as follows to include the State of Michigan:

TRENTON, N. J., June 4, 1917.

Whereas, a dangerously injurious disease known as the White Pine Blister Rust caused by a fungous parasite known as *Peridermium strobi*, Kleb., is known to exist in the State of Michigan, therefore, I, Alva Agee, as Secretary of Agriculture of the State of New Jersey, by virtue of the power conferred upon me by Chapter 268, Laws of 1916, State of New Jersey, hereby amend the Department of Agriculture quarantine effective on April 16, 1917, to include the State of Michigan.

This order shall take effect on the date thereof and remain in full force and effect until further order.

ALVA AGEE,
Secretary for Agriculture.

THE WHITE-PINE BLISTER RUST IN NEW JERSEY

This disease which has caused so much damage to the white pines in some of the countries of northern Europe, and which is known to exist in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York and Pennsylvania, in the east, was found in New Jersey during the summer of 1916 by Mr. P. V. Siggers, of the United States Bureau of Plant Industry, working in co-operation with the New Jersey Department of Agriculture. Mr. Siggers examined the 5-needle pines at 200 places, mostly in northern New Jersey, which included private plantings, estates, nurseries and re-forested areas. In addition, he also examined the currants and gooseberries in the vicinity of such plantings. In this way over 300,000 white pines were examined, out of which number a total of 67 trees were found infected

with the disease. These were found at four different places in the northern half of the state, and at a fifth place, infected currants were discovered. All of the infected trees were destroyed, the currants stripped of their foliage and the leaves burned, and the blocks from which the infected trees were taken placed under quarantine for an indefinite period.

During May, 1917, Mr. P. V. Siggers was again assigned, by the courtesy of the United States Bureau of Plant Industry, for scouting in New Jersey, and he, together with Mr. R. B. Lott and Mr. C. A. Schwarze, inspected all the white pines in nurseries, and also various estates in northern New Jersey, in order to determine the status of the disease.

The disease was discovered only at two places on 15 trees, which were destroyed. At both of these places the rust had been found during the spring of 1916. No new places were found to be infected. Conditions, therefore, are somewhat better. In 1916, a total of 67 diseased pines were found, and this year the number has been reduced to 15. The blocks in which infected trees were discovered last year and this year are still under quarantine.

This disease has been the subject of numerous quarantines by the United States Department of Agriculture and by a number of states during the past year. The character of this disease, and the strenuous efforts of the Federal Government and various states to eradicate it, justifies us in continuing our quarantine on the blocks of white pine in which this disease has been found.

During July, August and part of September, the United States Bureau of Plant Industry assigned Mr. V. A. Roberts for scouting in the state. Mr. Roberts spent July and August in the northwestern portion, examining such 5-needle pines and wild currants (the alternate host) as he could find, but did not find any trace of blister rust. During the first two weeks in September he examined with negative results pines in nurseries and at places where the disease was found last year. The state has therefore been inspected more carefully and thoroughly than ever before.

NEEDS OF INSPECTION SERVICE

In the past our appropriations have never been sufficient to permit a full execution of the law, but by a careful distribution of the funds and work, it has been possible to regulate the inspection so that each kind came in for a share. Moreover, as the public which purchases nursery stock regards the New Jersey certificate as a guarantee of the stock's freedom from pests, it is our duty to put forth every effort to make the certificate mean exactly what it states.

Even though inspection is not an absolute "cure all" against the introduction of pest, it is the only means at our command of preventing an overwhelming rush of insects and plant diseases capable of doing considerable damage, and it is the only way we have of holding and delaying the spread of pests until means of controlling them have been found, or until they are no longer dangerous. Even in this restricted use, inspection is a necessary phase of the state's agricultural activities and has done much in the past to lessen her burdens, especially as the presence or absence of insects within the borders of a community or state may make all the difference between sickness and health, irritation and comfort, and poverty and wealth. The freedom of the state from the gypsy and brown-tail moths is a condition which has been brought about solely by inspection.

The agricultural interests of the country are constantly in danger of new pests from foreign countries—

(a) The pests in some countries are not well known. This is especially true of the Asiatic countries.

(b) Many pests of other countries (e. g., European countries) are not thoroughly understood.

(c) A thorough knowledge of a pest in one part of the country is no index as to its activities when transferred to another part. It may prove more or less severe in its new home. It may restrict itself to its original host or it may pass to other hosts and do an enormous amount of damage.

(d) Many pests have periods of dormancy during which they cannot be detected by the inspectors who must pass the stock as apparently free from dangerous plant pests.

The above facts explain the introduction of our most recent serious plant diseases—(a) the chestnut blight; (b) the blister rust of the white pine, and (c) the poplar canker.

The war conditions have emphasized the importance of both national and state plant disease and insect pest surveys. These surveys should indicate the relative importance of the diseases and insects in various parts of the state. The surveys should be made by trained men, who have an appreciation of agricultural interests, and will necessitate more employes. We must look to the organization of this line of work if we are to keep up with other states.

Attention has been previously called to the difficulties of making satisfactory inspection of bush berry plants. The great bulk of this industry is in the vicinity of Hammonton. The location of a special inspector at Hammonton during the shipping season who could examine bush berry and other stock in that locality would greatly aid in solving this problem.

BEE INSPECTION

THOMAS J. HEADLEE, PH.D., STATE ENTOMOLOGIST
ELMER G. CARR, DEPUTY BEE INSPECTOR

SUMMARY

During the last six years 1,855 apiaries, containing 18,265 colonies, have been examined, and the 17.2 per cent infected with brood diseases in 1912 was reduced to 9.7 per cent in 1917.

With the exception of Cape May, Cumberland and Salem counties the inspection work each year has to a large extent covered different territory, only the infected apiaries being revisited. The decrease in bee disease must therefore be largely charged to educational effects of the inspection work and to direct educational effort.

Many lectures have been given, exhibits have been staged and much printed matter has been distributed. Three apiaries have been established and four maintained throughout the summer for the purpose of showing the beekeeper modern methods in building up a bee yard and in getting a crop of honey. Twenty-nine demonstrations have been given in these yards.

Intensive law enforcement against bee disease over the territory included in Cape May and Cumberland counties has reduced the amount of bee disease and increased the interest in beekeeping.

A serious and extensive outbreak of European foul brood at Millville has been suppressed and the hybrid strains of bees transformed to good resistant Italians.

Three queen-rearing apiaries have been examined and certificated.

A new bee disease has been studied and a possible method of treatment developed.

PLAN OF WORK

The purpose of this work is the suppression of serious diseases among honey-bees in order that the industry of beekeeping may take its proper place among the other lines of agricultural production. When the work began six years ago, the business of beekeeping had in many parts of the state fallen into a decay because, primarily, of the inroads of disease.

Because limited funds would not permit intensive inspection and elimination throughout the state, it was decided to attempt the quelling of outbreaks, to make examinations of apiaries on request, and to investigate the conditions in new territory. In 1913, this policy was modified in such a way as to undertake a plant of intensive inspection and elimination of bee diseases over a limited portion of the state. In 1917, a further departure was made in the establishment and maintenance of demonstration apiaries in co-operation with the extension division of the New Jersey State Agricultural College.

GENERAL INSPECTION

The statistics of the inspection work are set forth in the following table:

Year.	No. of yards inspected.	No. of colonies.	No. of box hives.	No. of frame hives.	—No. of colonies— infected with	
					American foul brood.	European foul brood.
1912.....	378	3227	355	2922	157	391
1913.....	327	2932	606	2326	81	238
1914.....	405	4001	802	3199	61	147
1915.....	247	2460	446	2014	63	95
1916.....	276	3227	598	2629	50	199
1917.....	222	2418	256	2153	64	174

With the exception of work done as later specified in Cape May and Cumberland, the inspection work of each year has largely been in territory hitherto not covered. Furthermore, most of the apiaries found infected one year are examined the next, and, perhaps, for the second and third year. In spite of the fact that the above conditions should tend to increase the amount of disease, from this table a decrease is evident.

The general decrease in the number of box hives used is a very encouraging sign of advancement for the first step in better bee husbandry and disease control is to get rid of such primitive apparatus.

A sudden and mysterious outbreak of European foul brood appeared this year in and about Millville. Prompt action on advice from us enabled the beekeepers who cared to make the effort to save a large proportion of their colonies while the stock of the indifferent bee husbandmen was destroyed. The trouble was overcome by requeening with good Italians.

EDUCATION

Bee inspection operates beneficially mainly through the information in bee disease control and the general principles of better bee husbandry which the apiarists receive during the inspector's visits. At the outset of the work a circular on the methods to be used in the control of bee diseases was prepared and distributed, but when the value of the educational feature became clear, "A Manual of Bee Husbandry" was prepared and placed in the hands of the beekeepers. Last year a series of circulars on the various necessary manipulations were mimeographed and distributed, each issue coming out just before the operation, which it described, became imperative. This year only one such circular has been issued, and that is concerned with the feeding of the bees which the short crop in some places will render necessary to prevent them from starving.

For the purpose of placing the latest and best information on fighting bee diseases in the hands of the beekeepers, a circular entitled "Bee Disease Control" has this year been prepared and distributed.

As our experience in the result of general inspection grew larger, the prime necessity of educating the beekeeper in better methods of bee culture became more and more clearly evident as a condition prerequisite to obtaining permanent results in bee-disease control. By 1917 this impression had become so strong that it was determined to enlarge the educational effort by establishing and maintaining demonstration apiaries. One was established at Daretown, in Salem County, and one at Plainsboro, in Middlesex County, in both of which methods to be used in building up a modern apiary from a small start were illustrated. One established at Egg Harbor, in Atlantic County, and one, which was already present at Highland Park, in Middlesex County, were run to illustrate methods used in producing a honey crop.

Each of the bee yards was placed in a region having different and representative types of honey flow. The Daretown yard is located in a summer honey flow region, the source being alsike and white clover. The Egg Harbor yard was placed in a summer honey flow region, the principal source being wild plants in the cedar swamps. The Plainsboro yard was placed in a summer and fall flow region, the source of honey being alsike and white clover in the summer and golden rod and aster in the fall. The Highland Park yard was located in a fall honey flow region, the sources of honey being golden rod and aster with perhaps a little buckwheat.

All told, 29 different demonstrations were held and 180 people attended.

INTENSIVE INSPECTION

The effort to control bee disease by intensive inspection and elimination work over a limited area, has been limited to Cape May, Cumberland and Salem counties. This year the pressure of general inspection was such as to prevent the re-examination of Salem. The results are set forth in the following table:

Cape May County

Year.	Number of Yards.	(Number—Yards Diseased.)			(Per Cent. of Yards Diseased.)			Number of Colonies.	(Number—Colonies Diseased.)			(Per Cent. of Colonies Diseased.)		
		E.*	A.**	Total.	E.	A.	Total.		E.	A.	Total.	E.	A.	Total.
1913...	40	19	0	19	47.5	0	47.5	210	73	0	73	34.7	0	34.7
1915...	56	16	0	16	28.6	0	28.6	330	28	0	28	8.4	0	8.4
1917...	37	7	0	7	18.9	0	18.9	137	17	0	17	12.4	0	12.4

Cumberland County

1913...	44	13	0	13	29.6	0	29.6	273	46	0	46	16.9	0	16.9
1915...	40	11	0	11	27.5	0	27.5	297	30	0	30	10.1	0	10.1
1917...	60	24	0	24	40.0	0	40.0	345	52	0	52	15.0	0	15.0

* European foul brood.

** American foul brood.

Like the results of 1915, the figures of 1917 show when compared with 1913 a decrease both in the number of colonies involved and in the number of yards infected with bee diseases, but there is evident an increase when compared with 1915. Yet a personal knowledge of the beekeepers clearly indicates a stronger interest in bee culture in 1917 than in any previous year. Only further experience can give conclusive results.

INSPECTION OF QUEEN-REARING APIARIES

The queen-rearing apiaries of Robert B. Spicer, of Wharton; J. H. M. Cook, of Essex Fells, and J. Field Garretson, of Bound Brook, were certificated as follows: (1) Robert Spicer on May 24 and August 1; (2) J. H. M. Cook, on July 19; (3) J. Field Garretson, on July 19.

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A NEW BEE DISEASE

A new and peculiar bee disease occurring in Monmouth county was studied and some clue to its nature and possible treatment obtained. Traces of this trouble were found in 1915; none were detected in 1916, and an outbreak occurred in 1917. All classes and ages of adult bees are attacked by it, but the young workers are the ones that suffer most of the harm. When prevalent the ground about the hives is covered with dead and dying bees. The bodies are only slightly swollen and the trembling characteristic of paralysis is almost absent. The contents of the alimentary canal are yellowish and watery and have a sharp, almost pungent, odor. Disease seems to follow cessation of a honey flow and to disappear when another good one begins. Presence of disease in the hive is accompanied by an oversupply of pollen and an undersupply of uncapped honey. The brood is healthy in appearance but limited in amount. It seems likely that prompt feeding with a thin sugar syrup may check the disease.