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DEPARTMENT OF AGRICULTURE

ALVA AGEE, Secretary

BULLETIN

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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 AGEES

The State Board of Agriculture has now had three years in which to organize the work of the State Department of Agriculture and to render some direct service to the people of the state through this agency. The reports of bureau chiefs are submitted with a degree of confidence, and this is based upon the fact that policy is determined by conference with representatives of all the various agricultural interests. The state-wide organizations that the Department found in existence, and the other organizations that have been formed in the last three years, have served as means of learning the will and of securing the best judgment of the men engaged in the various lines of production and in the distribution of farm products. The men in official position in these organizations and in special advisory committees to the Department of Agriculture, including the Master of the State Grange, who have given their time to counsel of the State Board's work, have placed us under direct personal obligation.

BUREAU OF ANIMAL INDUSTRY

More than one-third of the entire appropriation made to the Department is expended through the Bureau of Animal Industry in the control of disease. Doctor McNeil's report affords evidence of the efficiency of this work. The clean-cut policy is to bar the importation of diseased animals, to stamp out such virulent diseases as anthrax and glanders with energy, to encourage the maintenance of absolutely clean herds through the accredited herd plan and otherwise, and to assist so far as funds are available in the control of infectious swine diseases.

The swine situation is difficult. No adequate appropriation for control of swine diseases has even been contemplated by the Legislature, as small herds of hogs are found upon nearly all farms, and the amount of appropriation to reach every herd in case of necessity would be large. There has been the additional consideration that the control of these diseases should be possible to practicing veterinarians, and the Department never has desired to interfere with the true field of labor of men equipped for their life work. On the other hand, swine diseases are a menace to our state's wealth, and there are sections of the state in which adequate control of them has not been maintained by men in private practice. This is due in a large degree to the financial inability of many farmers to secure treatment of single animals that may become ill. The question whether the Legislature should make provision for stamping out this disease could well be considered by County Boards of Agriculture, and if a plan is worked out it should not involve loss of income to practicing veterinarians. As matters have stood, the bureau has given all the time of its veterinary staff that could be spared to this work, and its efficiency has been greatly increased by the active co-operation of county farm demonstrators.

BUREAU OF MARKETS

Within the last half century the methods in manufacturing, transportation, and merchandising have been revolutionized. It has come about that the direction of work has gone into the hands of a few men who are most expert, and the great mass of people have lost self-direction. Agriculture remains the only field in which millions of men have retained self-direction. The Bureau of Markets believes that the profits of the producer may be increased and the price of food to the consumer may be materially decreased if some degree of self-direction be surrendered by farmers through co-operative action that places the buying of supplies into the hands of people specially trained, and that leads to such standardization of food products that the road to the consumer may be shortened and the selling may be done by men who understand distribution. The assistance of groups of men desiring to form co-operative societies has been rendered freely by the bureau, and the Department has encouraged the activities of representative members of co-operative associations looking forward to some closer relationship among these associations. It

appears to the Department entirely practicable that the co-operative endeavor of this state may soon be so organized that any company of men in any part of the state may avail themselves of the best skill obtainable in the purchase of supplies and in the distribution of their products through some sort of federated action.

It will be noted that curb markets have proved their value in bringing producer and consumer face to face, and it will not be possible to meet the demand of municipalities for service in organizing such work and promoting it without some increase in our staff. Two of the larger cities of the state are making plans to house these markets permanently, and other cities soon will do the same.

Probably the standardization of farm products means more to producer and consumer than any other single line of endeavor of the bureau. The State Potato Association has voluntarily adopted grading, and an advisory committee of horticulturists has assisted in the standardization of packages.

A feature of the bureau's work peculiarly gratifying to the State Board of Agriculture is concerned with transportation. No brief summary of the extraordinary results secured by the transportation specialist, Mr. Bamford, could serve appreciably in extending knowledge of a service that has reached thousands of New Jersey's producers. Great transportation lines and smaller organizations have worked in harmony with the bureau, and chiefly for the reason that the suggestions to them have been constructive rather than destructive.

An advisory committee to the bureau representing producers and distributors of milk is assisting the dairy products marketing specialist in his work. It is entirely practicable to reduce some cost of distribution, as our surveys indicate, and experience has shown the bureau that the consumption of dairy products can be increased. The latter effort is even more directly in the interest of the public than of the producer, as is evidenced by the tests of scientists who have learned the absolutely essential character of milk as a human food.

BUREAU OF STATISTICS AND INSPECTION

Inspection work, carrying out the provisions of state laws, is a vital safeguard to the horticultural, farm, and bee interests of the state. The only invasion of importance that has not been controlled

is that of the Japanese beetle. The Department is co-operating with the Federal Department of Agriculture in this work, and it is most important that the spread of the beetle be restricted, if the pest cannot be stamped out, in order that there may be time to learn the best methods of control and to introduce parasites that will hold it in check and maintain balance sufficient to save the state from extraordinary loss.

CROP REPORTS

There is a debt of obligation to five hundred men scattered throughout the state who carefully make monthly reports on crop conditions as a free service to the state. There is no provision for securing exact data on acreage of all crops in the various counties each season, and that is a serious drawback to accuracy, but the state does have the judgment of five hundred selected men in the matter of increase and decrease in acreage and monthly condition. Formerly such information was monopolized by commercial bodies that secured their own reports, and it is only through official service that such information can be placed in the hands of all producers. This service is in direct charge of Mr. H. B. Weiss, chief inspector of the bureau.

SEED CERTIFICATION

The certification of Jersey-grown seed potatoes by the State Potato Association and the Department of Agriculture, working in co-operation, was begun this year. A very large sum of money is sent out of the state annually for seed potatoes, and their importation has led to the introduction of much disease, notwithstanding the great care that has been exercised by growers. It is believed to be feasible to produce New Jersey's stock of seed potatoes within the state, a late-planted crop providing seed of fine vitality and productivity. If all the seed can be grown under known conditions in respect to variety and freedom from disease, a big factor of hazard in potato production will have been removed.

FARMERS' INSTITUTES

The Department co-operates closely with county boards of agriculture in the conduct of farmers' institutes. Assistant Director W. H.

Hamilton, working with county demonstrators and executive committees of county boards, and through the demonstrators with local community associations, is able to provide the character of meeting that is desired, and no ones can be more competent to determine their own needs than the progressive farmers who form community organizations. There is reason to believe that the efficiency of the institutes increases, notwithstanding their long record of usefulness.

COMMERCIAL MANURE

Special mention should be made of a bulletin on "The Collection, Handling, and Sale of City Stable Manure" soon to be issued, and partly because it is illustrative of State Board methods. Much complaint has come to the Department respecting the quality of city manure. A representative of the Department, co-operating with Mr. J. B. R. Dickey of the Extension Service in the State Agricultural College, began a survey of the situation and gathered a great lot of dependable material. This is being placed into the form of a bulletin of information only, the thought being that if any regulation of this business is possible it will come through the demand of the people after the facts have been laid before them, and if control is not practicable the profit from an inside knowledge of the situation will remain, anyway.

STATE-WIDE ASSOCIATIONS

The State Horticultural Society, which has been a great factor in the development of New Jersey horticulture for forty-three years, has served as an inspiration for the promotion of organizations concerned with special interests. Probably no other state in the union now has more live state-wide agricultural associations. The last one added to this list is the New Jersey Sheep and Wool Growers' Association, which was organized in the State House, February 20, 1919. This association immediately became useful in an organized effort to secure the grading and pooling of wool for market, and will increase the interest in the production of sheep and wool.

An illustration of the advantage of organization along the line of special interest came last summer when the Federal Trade Board was considering the removal of restrictions upon importation of potash into this country. A request came that the Department be rep-

resented at this hearing where American manufacturers of potash would press for retention of restrictions. The state associations vitally interested in potash fertilizers were called upon, and seventeen of their representatives, in company with the chief of the Department's Bureau of Markets, joined the president of the State Board of Agriculture in presenting the needs of the farmers for free supplies of potash. Within two days a favorable decision was announced, and a note came later from the chairman of the Federal Board stating that the facts as presented could warrant only one decision and that was the removal of restrictions. The Department believes that its best service in all constructive work can be done only through co-operation with organized groups of men who have the interests of agriculture at heart.

MILK DEALERS' LICENSES

The enforcement of the state law respecting the licensing of dealers in milk and cream has never been entirely satisfactory, but it has gained materially in efficiency this year through the effort of Mr. Bennetch. There has not been any appropriation that permits a personal canvass of the state to secure all the facts necessary to rigid enforcement, and there has been a popular misconception that the law provides for the bonding of all dealers. This is neither the letter nor the spirit of the law. The purpose is to require the licensing of all dealers within certain classes, and to require the bonding of such dealers as do not possess adequate financial responsibility as shown by their sworn statements and whatever information can be secured indirectly. It has been possible to secure the payment of many thousands of dollars of indebtedness to producers this year as a result of this act, and beyond doubt considerable material good does result from this law.

RELATIONSHIPS

The work of the various bureaus in the Department has been rendered more efficient through co-operation with Departments in the State Agricultural College and the county boards of agriculture. The accomplishment of the Department would be much smaller if there had not been some direct assistance of county farm demonstrators, who really take upon themselves the responsibility for institute meet-

ings, assist in making our crop reports accurate, accept leadership in promoting the projects of the Bureau of Markets, and work with the Bureau of Animal Industry in disease control. The greatly enlarged usefulness of county boards of agriculture is one of the finest developments of the last three years, and is due to the public spirit of leading farmers in every county.

The Department's relations with the State Chamber of Commerce, the Agricultural Committee of the State Bankers' Association, and the State Department of Conservation and Development, have been most helpful. The work inaugurated by the Department to encourage the purchase of New Jersey farm lands has been turned over to the Department of Conservation and Development because it was equipped to do the work better.

"AGRICULTURAL WEEK"

"Agricultural Week" was held at Trenton, January 14-17, and the following associations held annual or adjourned meetings:

- New Jersey State Horticultural Society
- New Jersey State Poultry Association
- New Jersey Holstein-Friesian Breeders' Association
- New Jersey Guernsey Breeders' Association
- New Jersey State Dairymen's Association
- New Jersey Alfalfa Association
- New Jersey State Potato Association
- New Jersey Beekeepers' Association
- New Jersey State Association of Nurserymen
- Central Jersey Hog Growers' Association
- Home Economics Workers
- Marketing Conferences

The exhibit at the armory was educational in character and attracted large numbers. "Agricultural Week" has proved itself an institution that the people want.

APPROPRIATIONS

The Legislature last winter indicated its willingness to appropriate to the Department all the money that was needed, but insisted that the State Board ask only for absolute needs, as the burden of war

called for rigid economy. There is some expansion, especially in the Bureau of Markets, that now has become imperative. The Department has established such relations with New York commission merchants that its accountant will be welcomed to examine books in the case of any shipper who may feel aggrieved, and such a step toward an open understanding between shipper and commission merchant is important. Such an accountant would also render service in the study of milk distribution. The need of a competent man to keep consumers acquainted with the character of food supplies about to come upon the market from week to week, and relative food values, in order that there may be adequate demand for products at the height of the season, continues, and such an appointment, which was recommended by the horticultural advisory committee to the bureau, should be provided for without delay. Another member of the bureau staff to assist in establishing curb markets and the standardizing of products is wanted.

The expectation that the cost of supplies and of living would decrease after the war has not been met, and the Department has been cramped for funds on account of imperative necessity of increasing the salaries of some members of the staff and clerical force who were not well paid, and the increased cost of supplies has been a burden. It should be borne in mind by the farmers of the state as represented in the Grange, county boards of agriculture, and state-wide special interest associations that the budget of the Department of Agriculture is their concern and within their rightful field of knowledge, and it is the belief of the State Board that if all the funds appropriated to the Department are efficiently expended that whatever expansion is best for the state's agriculture will be provided for.

PUBLICATIONS

A list of bulletins and circulars issued by the Department during the last fiscal year is as follows:

Bulletins

- No. 15. Alfalfa.
- 16. Dairy Products Essential to Health.
- 17. Third Annual Report of the New Jersey Department of Agriculture.
- 18. Seed Potato Production in New Jersey.
- 19. Proceedings of the Fourth Annual Agricultural Convention.
- 20. The State Potato Association, The State Dairymen's Association, and the State Alfalfa Association, Agricultural Week, 1919.

Circulars

- No. 23. Farms for Sale in New Jersey.
- 24. Unusual Nursery Insects.
- 25. The More Important Insect Enemies of the Rose-Mallow in New Jersey.
- 26. Nursery Insects
- 27. Crop Statistics, County Boards of Agriculture and Granges.
- 28. Requirements and Rules for the Inspection and Certification of New Jersey Second Crop Seed Potatoes, as adopted by the New Jersey State Potato Association and the New Jersey State Department of Agriculture.

REPORT OF THE BUREAU OF ANIMAL INDUSTRY

DR. J. H. McNEIL, *Chief*

A brief review of the work of the fiscal year shows that much has been accomplished towards the control of infectious diseases, directly affecting the swine, dairying and pure-bred cattle industries. There has been an awakening on the part of persons interested in these industries, with the desire to produce more and better animals. They have also met the demands of the people and the requirements of the Board of Health authorities, and are producing better and purer products in the form of meat and milk.

The conditions brought about by the privations incurred by the World War have taught a valuable lesson regarding the value of milk as a concentrated food. Experimentation has demonstrated that it contains properties absolutely essential to the growth and development of children. The various local boards of health and medical milk commissions have broadened their scope of operation, and are insisting that milk must be produced under the best sanitary conditions, and from cows known to be free from disease, especially tuberculosis. Further education along these lines is necessary in order that consumers may appreciate the value of clean milk from healthy animals. It is an essential, safe, cheap food.

There are certain sections of the state which are almost entirely given over to commercial dairying, and most of the animals used in these dairies are purchased from adjoining states. It is one of the functions of this bureau to inspect tuberculin test charts and conduct tuberculin tests and retests, in order to protect the dairy industry against loss from the entrance of diseased animals and to insure a safe product in the form of meat and milk for human consumption, also to protect the breeder and dairyman from financial loss by the introduction of diseased animals which convey infection to his herd. The sanitary control methods adopted and executed limit the spread of infectious diseases both to man and animals, prevent loss, and increase the quantity of salable products either in the form of meat or milk.

The advance in the cost of feed and in the value of beef, pork, and mutton has stimulated the breeders of pure-bred and grade animals to better efforts and caused them to institute economical methods of feeding and handling.

The control of infectious diseases has become a great factor in the success of animal husbandry, and in order to meet the requirements, veterinarians have cultivated the new field, and as a result better work is being done and there is a closer and more intimate relationship existing between the private practitioner, the dairyman, and the breeder of pure-bred and grade animals.

INFECTIOUS SWINE DISEASES

Swine diseases continue to give us grave concern, causing losses to swine owners in all sections of the state. Much remains to be done, both from a regulatory and educational standpoint, before hog raisers are brought to the realization that losses sustained could be prevented if recognized measures for prevention were adopted at the proper time. The bureau can give assistance to only a small number of applicants for help, and owners should not delay calling their nearest veterinarian when an outbreak occurs on the premises, or when the disease exists in the immediate neighborhood. If quarantine and isolation measures were adopted, many outbreaks would not occur.

The following is a summary of the number of animals vaccinated by the Bureau of Animal Industry veterinarians and those treated for owners by private veterinarians during the fiscal year 1918-19.

Number treated by bureau veterinarians—	
Serum alone	1,175
Simultaneous	2,725
Number treated by private veterinarians—	
Serum alone	1,163
Simultaneous	3,739
Grand total	8,802

The record by counties is as follows:

	Single	Double
Atlantic	95	20
Bergen	4	217
Burlington	382	440
Camden	64	57
Cape May	263	211
Cumberland	101	114
Essex	48	116
Gloucester	148	186
Hudson .....	...	780
Hunterdon	57	174
Mercer	195	812
Middlesex	91	210
Monmouth	169	1,188
Morris	113	228
Ocean	216	774
Passaic	8	84
Salem	340	213
Somerset	14	463
Union	25	167
Warren	6	10
	<hr/>	<hr/>
	2,338	6,464

Total 8,802

GLANDERS

During August, 1918, there was reported to this office an outbreak of glanders in the city of Camden. A bureau veterinarian was immediately dispatched to make an investigation, and the report submitted showed glanders to be prevalent in the cities of Camden, Gloucester and Westville, and at the Yorkship Village under the control of the Emergency Fleet Corporation.

Measures were immediately adopted looking toward the control and eradication of the disease. On account of indemnity not being allowed for glandered horses, the work of speedy eradication was hindered materially. Physical examination revealed a number of cases, and these animals were immediately slaughtered. Mallein testing of all exposed animals was commenced at once. The first test of 60 head of horses resulted in the condemnation of 18 head. These animals were slaughtered and an autopsy presented lesions of glanders. A total of 1,437 animals were mallein tested and 56 reactions were reported.

Most, if not all, of the horses were used on emergency war work, which made the mallein testing slow and tedious. The animals were stabled at distant points, and because of the extra travel to cover the territory two bureau veterinarians and one private veterinarian were employed in the work.

In order to meet the requirements of the New York Board of Health that all horses crossing the ferries at Jersey City and other points be mallein tested, approximately 5,000 animals were tested and banded at this point.

The number of animals tested with mallein as reported by private veterinarians was: negative, 2,268; positive, 65.

HORSE BREEDING

Horse breeding has not progressed for several years, the cause being due to several factors. The advent of the truck and tractor in combination with the very high cost of maintenance have been the chief contributing agencies. With the advent of normal times, horse breeding should be revived, and suitable types bred to replace those discarded on account of disease, disability or old age.

Below is submitted a summary of registration of stallions for the year 1919-20.

Stallion Registrations

Burlington	15
Camden	1
Cumberland	5
Gloucester	1
Hunterdon	27
Mercer	5
Middlesex	2
Monmouth	6
Morris	8
Ocean	2
Salem	10
Somerset	10
Sussex	5
Union	1
Warren	17
	<hr/>
Total	115

This total of 115 shows a decrease of 15 animals, as against 130 animals registered for the season of 1918.

ANTHRAX

No general outbreak of anthrax has occurred since August, 1917, and as there is an efficient means of prevention, farmers have been advised to have their cattle and horses vaccinated each year before turning them to the open pastures. One isolated outbreak was reported affecting the animals of a dairy in Essex County. The report was confirmed by laboratory diagnosis. Four of the animals died, the remainder were vaccinated, and no further losses occurred.

There is a definite area of low lands in South Jersey which is subject to overflow, and here in certain years anthrax is very prevalent and fatal to both cattle and horses. For two years past, protective inoculation has been so systematically and effectively practiced on the animals in this area that no losses have occurred in 1,500 head of animals vaccinated each year.

SHEEP SCAB

In the month of November, 1918, sheep scab was reported as existing in Morris County, affecting a band of 800 sheep imported from New York State. Investigation conducted by a bureau representative verified the diagnosis, and measures were instituted to treat those already infected, and prevent the spread of the disease to others not showing signs of it.

TUBERCULOSIS

The control of tuberculosis in cattle and swine is one of the most difficult problems this bureau has to deal with. In connection with this work the most approved methods of applying the tuberculin test are being used, and tuberculin has been one of the agents employed which has enabled us to place herds on a safe basis and offer the prospective buyer assurance that he can purchase animals free from tuberculosis.

The systematic tuberculin testing of dairy herds and the elimination of the reactors from dairies where milk is produced and sold in the raw state, should eliminate the possibility of tuberculosis being carried to susceptible children and adults. The usual slow insidious development of tuberculosis in cattle may lead the breeder and dairyman to believe that the disease is of little consequence, and therefore not worth serious consideration. However, there is an increased number of the more progressive breeders and dairymen who fully appreciate the danger of maintaining herds affected with tuberculosis and who are willing to adopt measures for its control and eradication.

In the last annual report, mention was made of the adoption of the accredited herd plan for the control and eradication of tuberculosis from herds of pure-bred and grade cattle, and the eradication of tuberculosis in swine. A tuberculosis-free accredited herd is one which has been tuberculin tested under the supervision of the Federal Bureau of Animal Industry, or a regularly employed veterinary inspector of the state, and further is a herd in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, and by physical examination.

The plan as adopted was the result of a conference between representatives of breeders of pure-bred and grade cattle, and the Federal and state sanitary officials. By this plan uniform methods have been adopted, and all breeders and dairymen are given an opportunity to have their entire herds tuberculin tested and retested free of all expense, and guaranteed appraisements are offered for all reacting tubercular animals. This plan has the endorsement of all progressive breeders who have a desire to eradicate tuberculosis from their herds, and when in full operation will permit of the free interchange of cattle without the danger of placing in the herds diseased tubercular animals. The plan has been accepted and in operation in New Jersey during the past fiscal year.

The following summary regarding the accredited herd system has been compiled from reports issued by the Federal Bureau of Animal Industry, and will serve to demonstrate the progress of tuberculosis eradication in the United States. These figures do not include the number of animals tuberculin tested by private veterinarians, or the bureau officials of the different states.

	Herds	Pure-Breds	Grades
Once tested without reactors—			
Before July 1, 1918		14,298	7,914
After July 1, 1918, to April 1, 1919	6,535	39,558	57,685
		53,856	65,599
Accredited—			
Before July 1, 1918		5,743	1,202
After July 1, 1918, to April 1, 1919	782	12,082	6,939
		17,825	8,141
Under supervision but containing one or more reactors	2,142	40,586	43,238

From the adoption of the plan until July 1, 1918, 79,418 animals were tuberculin tested by state and Federal officials. From July 1, 1918, to April 1, 1919, 150,098 animals were tuberculin tested, making a grand total of 9,459 herds comprising 229,516 animals.

There are on the New Jersey accredited list 10 pure-bred herds, 8 grade herds and 25 mixed herds, making a total of 43. Of this number, 2 are fully accredited, and a total of 2,920 animals have been tuberculin tested.

To make restriction of the importation of tubercular cattle more effective and to exercise control of all tuberculin testing of cattle intended for interstate shipment, the Federal Bureau of Animal Industry made operative July 1, 1919, Federal Regulation No. 7, which provides for the tuberculin testing of all dairy and breeding animals at point of origin by a United States bureau veterinarian, or by a veterinarian authorized by the state and approved by the Federal bureau. Neat cattle are exempted when consigned to dealers known to be engaged in the business of slaughtering cattle.

The following is a summary of activities conducted under supervision of the Bureau of Animal Industry for the year 1918-19:

Number of cattle tested by United States and New Jersey Bureau of Animal Industry veterinarians in connection with the accredited herd plan	2,920
Number of reactors	279, or 9.5 per cent
Native cattle tested by New Jersey Bureau of Animal Industry veterinarians	512
Number of reactors	95, or 18.5 per cent
Native cattle tested for owners by private veterinarians	9,557
Number of reactors	691, or 7 per cent
Native cattle tested for export by United States Bureau of Animal Industry veterinarians	46
Number of reactors	3, or 6.5 per cent

Native cattle tested for export by New Jersey Bureau of Animal Industry veterinarians	638
Number of reactors	18, or 2.8 per cent
Total number of native cattle tested	13,673
Number of reactors	1,086, or 7.9 per cent
Total number of reactors slaughtered	1,442
(Some of these were held over from last year.)	
Cattle tested before entering the state by private veterinarians	7,309
Number of reactors	315, or 4 per cent
Cattle tested before entering the state by United States Bureau of Animal Industry veterinarians,	1,024
Cattle tested after entering the state by New Jersey Bureau of Animal Industry veterinarians	6,461
Number of reactors	442, or 6.8 per cent
Cattle tested after entering by United States Bureau of Animal Industry veterinarians	54
Number of reactors	13, or 24 per cent
Number of imported cattle released at Paterson ...	31,767 head
(Number of head in cars not counted.)	7 cars
Number of imported cattle released at Newark	206,554 head
Number of imported cattle released at Jersey City ..	1,323,166 head
(Number of head in cars not counted.)	2,280 cars
Calves under six months released	2,200
Slaughter cattle entering on permit	2,300
Feeders entering on permit	260
Board of Health reports—Condemned on physical examination and slaughtered	199
Condemned on tuberculin test and slaughtered..	78
Number reported by private veterinarians	62
Appraisements—Total number	358
Total amount of appraisements...	\$16,143.00
Total amount paid	12,107.25
Number sold by owners and slaughtered under inspection	1,172

REPORT OF THE BUREAU OF MARKETS

ALEXIS L. CLARK, *Chief*

The war magnified the importance of certain marketing problems and added some new phases to the bureau's work, but in the main our program has remained much the same as was outlined for the year 1917. As the war conditions emphasized our nation-wide inefficiency in food distribution, it forced home to the bureau three points in particular; namely, the obligation we were under not merely as paid representatives of the state, but also as citizens to give our service to the limit, as our contribution to the winning of the war; second, the tremendous importance of the work entrusted to us; and third, the realization that, the farmers having accomplished nearly the impossible—the production of more food with less help and in the face of many other obstacles—the problems of marketing which had seemed so overwhelming for years could surely be solved.

ADVISORY COMMITTEE

The bureau co-operated in many ways with federal and state organizations during the war. When it became apparent that these forces, such as the Food Administration, would surrender their control with the signing of the armistice, invitations were sent out to various state organizations requesting a conference on reconstruction and marketing problems. The representatives responding to the invitation constituted an Advisory Committee to the Bureau of Markets. The first meeting of the committee was held in the State House, Trenton, January 11, 1919. At this and a subsequent meeting, the following program for marketing work was adopted:

Project 1.—Standardization of Market Products.

- (a) *Packages.* Limit styles and sizes of packages to those best adapted for various products and uses.
- (b) Establish standard grades for such products as lend themselves to standardization. Provide for educational work with producers and dealers in supporting standards.

Project 2.—Organization of Groups of Farmers For Cooperative Buying and Selling.

- (a) Emphasize apparent advantages and difficulties to communities.
- (b) Assist in organizing new associations.
- (c) Cooperate with existing organizations.
- (d) Consider plans for federating or unifying all organizations.

Project 3.—Transportation.

- (a) Secure and preserve best possible freight service for produce. Urge earlier closing hours at shipping points and insist on delivery hour of 12:30 A. M. at Jersey City for perishables. Cooperate with New York and New Jersey Port and Harbor Commission for better unloading and transfer facilities in Jersey City. Promote spirit of cooperation between railroads, receivers and farmers.
- (b) Work for greatly improved service on express lines. Study and locate definite faults and insist upon correction.
- (c) Foster use of motor trucks for short hauls and in motor express lines.

Project 4.—Wholesale Business.

- (a) Regulation of produce commission business so that confidence will replace distrust between farmers and commission men.
- (b) Cooperate with New York and Philadelphia market officials in safeguarding interests of New Jersey shippers.

Project 5.—Retail Business.

- (a) Recommend to the State Board of Agriculture the employment of a Specialist in Food Production and Marketing Conditions, who would be an experienced newspaper writer, so that consumers of food might be made acquainted with relative food values, seasonal supplies and conditions under which producers render their service to the public.
- (b) Establishment of farmers' curb markets.

Project 6.—The Milk Supply and its Distribution in New Jersey Cities.

- (a) *Reasons.* We have at the present time very inadequate information relative to the sources of milk and cream supply, the quality of the various grades consumed, and the various methods by which it is gathered and distributed in New Jersey cities. In order that we may have a better knowledge of the complicated problems connected with the market milk business as at present established, so as to overcome impracticable schemes for revolutionary changes and suggest means and methods whereby distribution may be made more efficient, such information is needed.

- (b) *Object.* To secure reliable information regarding the milk supply of various New Jersey cities, sources, quantities, transportation; methods, costs and efficiency of distribution; consumption of milk and other dairy products; grades of milk sold, etc.

Distribution by Producers. Determine whether greater efficiency in distribution may be secured by cooperative distribution by producers, particularly in the smaller New Jersey cities, and where desired assist in organizing such producers for cooperative handling or distribution, or both.

Grades. Make study of grades of milk sold in New Jersey cities looking toward standardization of grades.

- (c) *Methods.* Conduct a detailed survey through milk distributors in the various cities to be surveyed, using prepared blank form which in some instances may be sent by mail.

Project 7.—Consumption of Dairy Products.

- (a) *Reasons.* The consumption of dairy products, particularly milk, should be increased for the following reasons:

1. Milk and its products are the cheapest foods we have.

2. Greater consumption will result in a better development of the physical condition of the city population where the annual consumption is now 112 quarts per capita.

3. Increased consumption will stimulate production.

- (b) *Objects.* To bring the facts regarding the relative cheapness, relative food value, and the superlative value of milk in the dietary to the attention of consumers; also cost of production and distribution and means by which consumers can help to keep costs down.

- (c) *Methods.* Employ proper publicity through women's organizations, schools, health departments of cities, home demonstration organizations, and the press.

The National Dairy Council is now organizing state units and proposes to organize such a unit in New Jersey to include representatives of producers, distributors, etc., to carry on this work.

In all this work it was the desire of the committee that no duplication of effort should occur with other organizations or institutions, and that the marketing program be carried out conservatively but persistently in co-operation with the Federal Bureau of Markets and other state marketing agencies. It was realized that only by securing the actual interest and support of forward-looking farmers, especially the various farmers' organizations in the state, could any degree of success be secured.

This advisory committee was composed of men representing the various production interests of the state, and it became evident that its work could be performed with less waste of time to the members if it was sub-divided into two committees, one of which would have charge of all problems arising in the marketing of dairy products, the other dealing with the other problems of the bureau. The membership of the original committee as now reorganized is as follows:

E. A. Sexsmith Chairman
Joseph Barton
Putnam A. Bates
F. M. Curtis
Walter H. Havens
A. R. Kohler

L. Willard Minch
A. Crozier Reeves
George T. Reid
Jan vanHerwerden
Charles N. Warner
J. V. B. Wicoff

The personnel of the Advisory Committee to the Bureau of Markets dealing with dairy problems is as follows:

H. W. Jeffers, Chairman
R. V. Armstrong
Charles H. Cook

William Kroog
Theodore M. Roe
C. Craig Tallman
Asher B. Waddington

STANDARD GRADES FOR MARKET PRODUCTS

The United States Food Administration enforced standard grades for potatoes last year. New Jersey growers in general approved of the measure from the very first and although there was some criticism, the benefits during the shipping season proved so apparent that a strong demand was made this year for its continuance. As there was no law covering enforcement after the Food Administration rulings were withdrawn, some fear was manifested that conditions would go back where they were before the war. Such fears are apparently unfounded, as all shippers from the individual grower to the dealer and the large growers' associations have decided that the grades recommended by the United States Department of Agriculture must be lived up to in order to maintain their favorable selling relations.

Potatoes will, therefore, be offered as standard graded or as ungraded, and all indications are that graded stock will command a market price enough higher than ungraded to pay the costs of grading and a premium besides.

Only two years ago the usual opinion in market circles was that such high-priced products as peaches and apples should be graded according to well-defined standards, but that such a common product as potatoes would not pay the costs of the operation.

Marketing seers are now anxiously considering where standardization will end. Every day shows more clearly that standard-graded products appeal to high-grade markets. They protect the farmers' interest in eliminating some of the unscrupulous methods as well as the right-meaning but unbusiness-like methods so often practiced.

Wheat, oats, corn and potatoes now have well recognized grade specifications recommended by the United States Department of Agriculture. All large dealings throughout the country are carried on with careful appreciation of these grades.

The emphasis which the bureau has placed on standard grades has met with pleasing results. Growers of apples, peaches, sweet potatoes and onions are fast assuming the same attitude as have potato growers. Dairymen also are interested in standard grades for milk. We are now giving this subject our closest attention. Our plans for next year include, as one of the important features, recommended standards for grading and marketing several important products. We believe that well chosen standards will be recognized and followed by leading growers and that gradually they will come into general use without legal enforcement. Any attempt of this sort, however, needs the whole-hearted co-operation of all farmers' associations in the state as well as of individual growers.

The importance placed upon this subject by some states must be viewed with interest by our growers. Many states have their own apple-grading laws. Texas has recently established legal grades for a dozen different kinds of vegetables; Idaho has just issued standards for several fruits and vegetables; Canada has had several years' experience in shipping under the so-called "Fruit Marks Act." Any one who has witnessed the systematic development of eastern markets by the growers of apples in the Northwest, of oranges in California and more recently of vegetables in that state, of onions in Texas and of many other products in other parts, cannot but look with some uneasiness upon the apparent spirit of contentment of many with the present condition in our own state. Marketing is fast growing into a highly developed art and all the natural ad-

vantages in the world will not maintain supremacy in our markets if we do not keep up in the progress that market methods are making.

STANDARD PACKAGES

The United States Railroad Administration has established regulations for all railroads in the South which prohibit the shipping of perishable freight in containers not conforming to standards prescribed by them. These standards have been formulated in conjunction with the Federal Bureau of Markets, and a similar plan is now being perfected for the benefit of the North and East. Recognizing the merits of the scheme but fearing some unwise restrictions, this bureau arranged for a conference in Camden on February 11. Mr. H. R. Cox, the county agricultural agent, kindly secured the use of the rooms of the Federal and State Employment Bureau for our use. Mr. E. A. Sexsmith acted as chairman and called upon nearly all of those in attendance to present their views. Mr. F. P. Downing, representing the Federal Bureau of Markets, and Mr. J. F. Deasy, of the Railroad Administration, presented their plans and gave reasons for instituting the work. Twenty-six growers from different New Jersey counties and several basket manufacturers took part in the conference. It was decided to have a small committee of growers select the kinds of packages which should be made standard for New Jersey. On April 8 this sub-committee of six growers met in Trenton and formulated a report setting forth the kinds and styles of packages most important in shipping state-grown produce. These suggestions were sent to the Railroad Administration and to the Federal Bureau of Markets. The suggestions in nearly every case are in accord with the recommendations of the Railroad Administration and the Federal Bureau of Markets.

It is evident that we will soon have national standards for all packages. Various states have passed laws but so much of the shipping is inter-state that national standards seem necessary. The need for standards was brought out by a survey carried on by the Federal Bureau of Markets in which more than twenty different styles of so-called bushel hampers with capacities ranging from 25½ quarts to 33 quarts were found.

A bill has been prepared for early introduction in Congress to fix standards for hampers and round stave baskets. The proposed legal dimensions for standard hampers are as follows:

CAPACITY	INSIDE DIMENSIONS.					
	Diameter of Top	Diameter of Bottom	Slant Height	Length of Stave	Thickness of Stave	Thickness of Bottom
	Inches	Inches	Inches	Inches	Inches	Inches
1 peck	10 $\frac{3}{8}$	6 $\frac{1}{2}$	9 $\frac{5}{8}$	10 $\frac{1}{8}$	$\frac{1}{10}$	$\frac{1}{2}$
$\frac{1}{2}$ bushel ...	13	8 $\frac{1}{2}$	12	12 $\frac{5}{8}$	$\frac{1}{10}$	$\frac{5}{8}$
$\frac{5}{8}$ bushel ...	14 $\frac{1}{4}$	9	12 $\frac{7}{8}$	13 $\frac{1}{2}$	$\frac{1}{8}$	$\frac{5}{8}$
1 bushel ...	15 $\frac{1}{8}$	9	19	20	$\frac{1}{8}$	$\frac{5}{8}$
1 $\frac{1}{2}$ bushels--						
No. 1	16 $\frac{1}{4}$	9	26	27	$\frac{1}{8}$	$\frac{5}{8}$
1 $\frac{1}{2}$ bushels--						
No. 2	16 $\frac{3}{4}$	10	23	24	$\frac{1}{8}$	$\frac{5}{8}$

The following is the report of the New Jersey committee:

Asparagus crate As per United States Railroad Administration standard.

Apple barrel As per United States legal standard.

Basket or open stave barrel As per present United States Railroad Administration standard.

Cranberry barrel As per present United States legal standard.

Cranberry crate Left open for further consideration.

Hamper baskets As per proposed standards in bill drawn by United States Bureau of Markets.

Round stave baskets As per proposed standards in bill drawn by United States Bureau of Markets.

Climax baskets As per present United States legal standard.

Six basket carrier with tills As per United States Railroad Administration standard.

Berry basket As per standards proposed by Federal Bureau of Markets.

Lettuce crate

Dimensions8 x 15 $\frac{1}{2}$ x 22 inches inside measurements.

Capacity2.728 cubic inches.

HeadsTwo heads $\frac{3}{4}$ x 8 x 15 $\frac{1}{2}$ inches.

Slats (top)Three slats on top $\frac{1}{4}$ x 3 x 23 $\frac{1}{2}$ inches cleated with cleats $\frac{3}{8}$ x 2 x 15 inches.

Slats (sides)Four slats on side $\frac{1}{4}$ x 3 $\frac{1}{2}$ x 23 $\frac{1}{2}$ inches.

Slats (bottom)....Two slats $\frac{1}{4}$ x 3 $\frac{1}{2}$ x 23 $\frac{1}{2}$ inches and one slat $\frac{1}{4}$ x 6 x 23 $\frac{1}{2}$ inches.

Making upAll slats to be securely nailed with not less than 2 cement-coated 4d nails at each end.

WoodTo be of seasoned pine or gum or wood of equal strength of sound material, free from injurious knots.

Cabbage barrel crate

Dimensions10 $\frac{1}{2}$ x 19 x 37 $\frac{1}{4}$ inches inside measurements.

Capacity7.431 $\frac{3}{8}$ cubic inches.

HeadsThree heads made of 9 head sticks not less than $\frac{7}{8}$ inch thick by 2 $\frac{1}{4}$ inches wide and 19 inches long, and 6 short pieces for ends and center not less than $\frac{7}{8}$ inch thick and 2 $\frac{1}{4}$ inches wide and 10 $\frac{1}{2}$ inches long securely nailed together with not less than 6 cement-coated 5d nails, 2 in each head stick.

SlatsFour on each side, 2 on top and 2 on bottom, $\frac{7}{16}$ x 3 x 39 inches.

Making upAll slats to be securely nailed with not less than 6 cement-coated 6d nails to each slat, 2 at each end and 2 in the middle.

WoodTo be of seasoned pine or gum or wood of equal strength of sound material, free from injurious knots.

Twenty-quart tomato crate

Dimensions6 $\frac{3}{4}$ x 11 x 18 $\frac{1}{2}$ inches inside measurements.

Capacity1.373 $\frac{5}{8}$ cubic inches.

Heads or ends ...Two heads made of one solid piece not less than $\frac{7}{8}$ inch thick by 6 $\frac{3}{4}$ by 11 inches.

SlatsThree slats on each side $\frac{5}{16}$ x 2 $\frac{1}{4}$ x 20 inches.

Slats (on top and

bottom)Three slats on bottom $\frac{5}{16}$ x 2 $\frac{7}{8}$ x 20 inches.

Two slats on top $\frac{5}{16}$ x 2 $\frac{7}{8}$ x 20 inches. These two slats must be so placed as to leave an opening between 6 inches wide in the center of the top of the crate.

Cover or lidTwo slats $\frac{3}{16}$ x 2 $\frac{1}{4}$ x 20 inches with one inch space between, cleated together with one cleat at each end $\frac{7}{8}$ x 1 x 5 $\frac{1}{2}$ inches.

Making upAll slats to be securely nailed with not less than 4 cement-coated 4d nails to each slat, 2 at each end. The nails in the cover to be clinched.

WoodTo be of seasoned pine or gum or wood of equal strength of sound material, free from injurious knots.

Thirty-quart tomato crate

Dimensions10 x 12 x 17 $\frac{5}{8}$ inches inside measurements.

Capacity2.115 cubic inches.

Heads or ends ...Two heads made of one solid piece of board $\frac{3}{4}$ x 10 x 12 inches, with an oval handle hole in each end 3 $\frac{1}{2}$ x 2 inches and a lip 5 inches wide and 1 $\frac{1}{2}$ inches high in the center and above the handle holes.

SlatsThree slats on each side $\frac{3}{8}$ x 3 x 19 inches. Four slats on bottom $\frac{3}{8}$ x 2 $\frac{1}{2}$ x 19 inches. Two slats on top near outer edges $\frac{3}{8}$ x 2 $\frac{1}{2}$ x 19 inches, and one slat on the center of the top $\frac{3}{8}$ x 5 x 19 inches.

Making upAll slats to be securely nailed with not less than 4 cement-coated 4d nails, 2 in each end.

WoodTo be of seasoned pine or gum or wood of equal strength of sound material, free from injurious knots.

FARMERS' BUSINESS ORGANIZATIONS

Interest in co-operative buying and selling has increased during the past year. There is plenty of proof now that farmers appreciate the need of sound business principles in this branch of their operations. In the report of this bureau for last year were listed 21 organizations in addition to 64 local branches of milk associations and 18 local poultry associations. Some of the associations formed during the past year are as follows:

South Jersey Federation of Farmers. H. Braid, Mgr., Vineland, N. J.

A federation of several successful buying and selling associations with a total membership of nearly five hundred.

Bergen-Passaic Farmers' Cooperative Association. D. Henniger, Mgr., R. F. D., Paterson, N. J.

Ninety members; incorporated in December, 1918; transacted business to July 1, 1919, amounting to about \$25,000. Buys supplies only.

Essex County Farmers' Cooperative Association. William Rathburn, Mgr., Caldwell, N. J.

Sixty members; incorporated in January, 1919. Has bought supplies amounting to \$10,000.

Belle Plain Farmers' Cooperative Association. T. J. Durell, Mgr., Belle Plain, N. J.

Buys and sells.

Warren County Farmers' Cooperative Association. A. S. Race, Mgr., Belvidere, N. J.

Buys and sells. Will doubtless supersede the tentative grain growers' association of the same county.

Cooperative Growers' Association. Wm. K. Hookstra, Sec'y, Beverly, N. J.

Incorporated in December, 1918; charters special train for shipment of one hundred members' produce daily to New York.

Hammonton Farmers' Cooperative Association. J. R. Fallon, Sec'y, Hammonton, N. J.

Buys supplies.

The attitude of feed, fertilizer and lime manufacturers has changed and many of them are now anxious to sell through farmers' associations.

In September of last year we wrote to a large number of manufacturers and wholesale jobbers of fertilizers, feeds, lime, spray materials, etc. The following is a copy of our letter to the fertilizer people:

Gentlemen:

During the past two years this bureau has assisted farmers in several different parts of the state to organize cooperative buying and selling associations. A number of these associations as well as some of the older and larger ones are now looking to us for assistance in purchasing supplies.

Fertilizer is one of the general needs of all these farmers, and we desire to help them make their purchases as direct as possible, saving all unnecessary handling charges and securing reliable quality. At this particular time when the world is calling upon American farmers to increase their efforts and produce to the utmost, this bureau is practically under obligations to render every assistance possible in this line. We take it for granted that you also feel this obligation.

We would like very much to have a representative from your company call on us in the near future so that a thorough understanding of our relation to the farmers, their organizations and to your company can be reached and strengthened.

Yours very truly,

Many representatives called on us and the spirit manifested by most of the concerns showed their appreciation of the progress of co-operation among New Jersey farmers.

Mr. W. L. Hundertmark has spent much of his time with some of the newer associations. For the Bergen-Passaic, the Co-operative Growers' and the Hammonton associations, he has opened books and systematized their account keeping. For other associations he has established most satisfactory relations with banks. A plan which is fast getting by the experimental stage is that of placing members' orders in the hands of the banks. When the carload of supplies arrives the bank pays the draft, holding the individual members' signed orders as promissory notes. Each member, of course, pays cash as he takes his goods out of the car, and the bank closes the deal in 48 to 72 hours. This assistance by local banks cannot be too highly commended as it meets the most difficult objection to the non-stock form of association. At Hazlet and at Swedesboro, Mr. Hundertmark assisted selling associations to standardize their grades of fruits and vegetables.

At the request of the State Alfalfa Association, the bureau placed a seal on all bags in a carload of alfalfa seed sold through a commercial seed house. A copy of the tag used is given below.

ALFALFA SEED	
Certification and Source Inspected and Approved by the New Jersey State Alfalfa Association. Sealed by New Jersey State Department of Agriculture	
..... GROWN%
..... "%
..... "%
Purity.....	Test Verified by
Germination.....	State Seed Laboratory
Tested.....19.....	
No Noxious Weed Seeds	
Sold By	

At the request of the Federal Food Administration, Mr. Hundertmark acted as their inspector of potatoes at shipping points last year. In the early part of the season many complaints were made. Most growers and shippers, however, made every effort to live up to the law and toward the end of the season no complaints were received.

At the request of the Gloucester County Vegetable Growers' Association, we have made a fairly complete investigation of the manure supply. Mr. J. B. R. Dickey, of the State Agricultural College, has co-operated with Mr. W. H. Hamilton of this bureau, and some very important facts have been ascertained. Our farmers are spending about one and one-half million dollars a year for city stable manure. Most of it comes from New York and Philadelphia. It lends itself easily to adulteration, and we have found that while most manure dealers handle their produce with care, there are some most undesirable practices in vogue. A complete report of this investigation will be published early this fall.

Mr. Hamilton was elected secretary of the New Jersey Sheep and Wool Growers' Association. This office gave him an opportunity to render assistance in a plan for co-operative wool marketing. Previous to this year practically all of the wool raised in the state has been sold to local buyers who pay a flat price regardless of grade or quality. Such prices were high for poor wool and low for good-quality wool. No incentive was offered to the farmer to

produce high-grade wool. Furthermore, it was a costly method of buying and collecting. The association is now experimenting in three methods of co-operative selling.

In the territory surrounding Morristown, the Morris County Farm Service Exchange is acting as local agent for the State Association. Wool is shipped to their warehouse at Morristown and will be graded and sold there. Warren and Sussex counties are pooling some wool at Tranquility, where Mr. A. G. Danks, president of the state association, is acting as chairman of the sales committee. They expect to sell directly to a factory. In Hunterdon County a pool consignment was made to a commission house in Philadelphia.

It is too early to state results of this work. However, one point has been plainly brought out, that in order to obtain top prices for wool the fleeces must be clean, free from seeds and tags, and properly put up for market. The system of selling wool in the past has caused growers to neglect these things, which mean 5 to 15 cents a pound this year on the market. There is a great need for educational work along the line of preparing the fleece for market.

A motion was passed at the Market Day meeting of "Agricultural Week" in Trenton, providing for the appointment of a committee to study the possibilities of federating the various farmers' associations in New Jersey. The chairman of the committee, Mr. W. H. Reid of Tennent, requested the Advisory Committee to the Bureau of Markets to make the study. This committee held several meetings in conference with representatives of the older farmers' exchanges and co-operative associations in the state, and at such a conference held on March 8 a motion was passed that a committee of three be appointed to draw up tentative plans for some sort of closer relationship that might be submitted later to all these associations for their consideration. The chief of the Bureau of Markets was requested to serve on this committee in addition to the other three members. Mr. Reid, who is a director in the Monmouth County Farmers' Exchange, was appointed chairman, with Henry H. Albertson of Burlington, a director of the Burlington County Supply and Produce Company, and John H. Hankinson of Glen Moore, a trustee of the Farmers' Co-operative Association of Mercer County, the other two members.

Farmers' organizations in general have made considerable advances beyond their condition last year. There has been some difficulty in bookkeeping methods and in establishing favorable re-

lations with some manufacturers. There seems to be a real opportunity for service in several other counties for co-operative buying and selling associations. Organized business efficiency must supplant individual effort, with its needless cost and waste both in buying and selling. A state-wide federation of county associations is apparently sure to come as we realize the need for better business methods in our farm practice.

We appreciate the splendid co-operation extended to the bureau by the county agents. Their approval and co-operation are sought on every definite project within their county and, while it is impossible to give proper credit to all parties who have worked with us, we desire to acknowledge the large share which these "rural organizers" have had in the record made by this bureau.

TRANSPORTATION

The Bureau of Markets is proud of the record made in the past year along transportation lines. Mr. H. B. Bamford, coming to us in the spirit of service, has remained, and railroad officials as well as farmers have appreciated his efforts.

Onion growers of Cumberland County, at his advice, were prevented from shipping soft, uncured stock. By going with such shipments to New York and inspecting their condition upon arrival, first-hand counsel was given to the growers. Fast freight schedules were followed and the telephone and telegraph used to ascertain the exact time of arrival and placement of cars in Jersey City. In the shipping of asparagus, tomatoes, peaches, etc., to out-of-state points, the most favorable routes and transfers were arranged for.

In August and September the can-house tomato situation became so confused that at the request of growers' associations, boat owners and canning factory owners, Mr. Bamford assumed practical charge of the situation in the southern counties. Boats were diverted, carloads of coal and cans brought in to the factories and many hundreds of tons of tomatoes saved by enforcing some system in their transportation. Only occasionally was an unfriendly comment made by someone who was temporarily deprived of special advantage. The Federal Food Administrator for New Jersey added the prestige of his office to our efforts and no serious objections have come from the whole work.

Empty cans for a condensed milk factory, empty cans owned by farmers and lost at transfer points, manure unloading machinery, carloads of fertilizers, tractors, seeds, etc., have been located in all parts of the eastern states and hurried on to their New Jersey destinations.

Railroad companies now depend upon this bureau for definite information for refrigerator and other cars needed in the future for certain crops at different loading stations. The old instances of lack of cars after a warm ripening period of weather are no longer experienced. Empty cars are on the siding a full week ahead of time now.

The oyster shipments have been straightened out where delays occurred at certain junctions. Several embargoes on manure and other commodities were lifted or modified at our request. In November manure dealers were given all empty cars needed so that shipments could be made before bad weather set in. Delegations of growers and shippers were escorted to several railroad hearings and arguments advanced showing the needs of farmers.

A special train was secured for the growers of the river-front district in Burlington County. For more than ten years the freight service there has been severely criticised; this year for the first time growers are getting their produce into New York on time.

Conferences have been held with food administrators, railroad and express officials, the New York and New Jersey Port and Harbor Development Commission, and various other committees. The express service so far has not responded to our endeavors. In some sections the progress of various agricultural pursuits depends upon improved express service, and we are bending every effort to assist the express service in organizing its system for more efficient market service.

The use of motor trucks has been given much study. For short hauls and as a substitute for teams, the motor truck has been of untold value to our farmers. It has become apparent, however, that when relatively low-priced, bulky farm products are to be hauled, at the present stage of highway maintenance, the motor truck cannot compete with the locomotive where good fast freight or express service is available.

COMMISSION BUSINESS

Small growers, as a rule, severely criticise the commission business in large markets. From our acquaintance with a number of prom-

inent men identified with the business, and with the business itself, we have felt that this spirit of criticism and distrust detracts from the efficiency of the business. Where growers believe that their returns are not actually based on the selling price, they see no objection to marking poorly graded products as fancy, and "topping off" packages. The commission merchant's usual argument is that the grower does not understand the complications of his business and that he would misunderstand actual returns, hence he is forced to "juggle" returns and make them appear good. Where two neighbors are shipping peas of the same quality on the same day, in the same car, the commission merchant may get one man's mark on the first truck from the car early in the morning. An out-of-town buyer may pay \$1.50 for them. An hour later, when the other shipper's peas come in, the merchant may be able to realize only \$1.00 for them. In order to avoid losing the second shipper by returning \$1.00 as compared with \$1.50 to his neighbor, the merchant may return \$1.25 to both. The merchant says it is an honest deal; he took nothing that did not belong to him. Sometimes, however, the first farmer finds out that the peas for which he received \$1.25 were sold for \$1.50.

Explanations are always difficult and usually unsatisfactory. There are many other ways in which consignors and consignees fail to co-operate. We are convinced that some merchants never "average" returns, but we do know that farmers will always be prejudiced against the commission business just as long as he has no knowledge of the selling price of his consigned goods. At the same time any fair-minded study of the business will show that farmers are just about as much to blame as are the merchants.

For many New Jersey farmers growing a variety of perishable products there seems no selling method quite so efficient as the commission way, provided grower and receiver can work together in a spirit of confidence for mutual profit. This past year we have given 35 days to studying the commission business in New York, Philadelphia and Newark. We have met with many splendid business men, officers of various associations, and have discussed with different ones all sides of the subject. It seems to us that the great need is confidence.

On March 19, a conference was held in the Booster's Club rooms in New York. Nine representative farmers, with Secretary Agee and representatives of this bureau, met with some twenty commission

merchants. These merchants were the leading receivers of New Jersey produce. After a very free discussion of the commission business, the Booster's Club appointed a committee to co-operate with the New Jersey Bureau of Markets.

The following memorandum of "Commission Service" was the result of our work with this committee.

MEMORANDUM OF "COMMISSION SERVICE"

Proposed by the joint committee appointed by the New Jersey State Department of Agriculture and the Booster's Club of New York City.

Object

The object of this "service" is to develop the spirit of cooperation between the farmers of New Jersey and the produce commission merchants of New York so that a better understanding of each other's problems and a more efficient distribution of New Jersey grown, perishable farm products will result.

With the increase in population and the development of great cities, together with the limitations of low-priced, virgin lands, the time of cheap foods in the United States is rapidly drawing to a close. The people of the country are demanding, and rightly, that every possible measure of efficiency be utilized in the distribution of food supplies. Certain peculiar problems are encountered in the handling of the nearby-grown perishables, and it is because of these that the serious attention of farmers and merchants is urged to this effort to promote within ourselves measures which will make our relations more pleasant, elevate our business and serve the public to best advantage.

Technical studies as well as practical experience show that the commission basis is admirably adapted to the wholesale distribution of perishable products.

Because the very nature of the business allows and invites questionable practice, both on the part of the agent in the city and the producer in the country, and because in the past a certain attitude of suspicion and mutual prejudice has prevailed, it is our conviction that not only is it necessary for us to break down these barriers, but it becomes a matter of personal obligation for us so to surround our business methods with safeguards that suspicion will be prevented and confidence and cooperation insured.

Definite measures for fixing responsibility, eliminating unfair competition and insuring complete understanding with each other are of utmost importance to both parties.

Standard Grades

It is resolved that standard, uniform grades throughout the nation, or at least throughout the state, are needed.

Standard Packages

The efforts already put forth to standardize containers are appreciated, and further developments in this line are advocated.

Divided Shipments

While it may be well to ship to more than one commission house, it should be realized by all farmers that divided shipments to the same market encourages the practice among buyers of putting one receiver's prices against another's and so lowering all market values.

Return Packages

Second-hand barrels, crates and baskets can be used to advantage in the short hauls carrying New Jersey produce to market so long as they are strong and clean and clearly marked. The habit of soliciting free packages from commission merchants is unwise. Someone in some way must always be paid for every service. It is recommended that all packages be sold with the contents, and that the collection and redistribution of these "empties" can be handled either as a cash basis side-line by commission firms as an aid to their shippers, or that it be given encouragement to develop by itself as a separate business.

Marking and Addressing

Much confusion, delay and loss can be traced directly to poor marking. Every shipment in less than carlots should have every package plainly and correctly addressed.

Reputation

A farmer's products soon gain a reputation in any market. The greatest advantages are secured by a reputation for uniform, well-packed products. No farmer can produce all high-grade goods, but the goods can be graded and marked so that the buyer can see at a glance and be sure of the actual quality. An honorable reputation will sell one grower's products on a slow market when unknown marks find no demand.

Closing Hours at Shipping Stations and Opening Hours in the Markets

Freight and express yards, as well as docks and streets, are yearly becoming more congested. The railroads are carrying more traffic and quick handling is becoming more difficult. The trains must be allowed sufficient time to reach Jersey City, and we favor later opening hours in the market rather than earlier closing hours at shipping points, although on account of congested conditions either or both may be necessary.

Personal Relations

Commission merchants are urged to visit the farmers who ship to them and advise with the growers as to methods of packing, degree of maturity, etc., for best results in their particular market. Growers are advised that much good can come to them by personally visiting their markets and noting market methods and demands. The personal relation between grower and dealer should be that of owner and agent, and the spirit of confidence and cooperation should be maintained to a marked degree.

Business Relations

In order to eliminate some of the evils that have developed in the city end of the commission business and to develop a genuine feeling of confidence and cooperation between farmer and merchant, the New Jersey State Department of Agriculture, through its Bureau of Markets, has been requested to furnish certain services, viz.:

Upon request, either by growers or merchants, any particular transaction may be examined and an explanation made with duplicate copies sent to both parties. Commission merchants will afford every assistance in the examination of books and accounts so that a thorough and complete report can be made.

The names and addresses of commission merchants subscribing to the above service shall be printed from time to time by the bureau and distributed among the farmers of the state.

If a merchant, after subscribing to this memorandum, desires to withdraw, he shall give one month's notice to the Bureau of Markets, State Department of Agriculture, Trenton, N. J. The joint committee of the Department and the Booster's Club shall meet quarterly to counsel with the Bureau of Markets regarding any changes or improvements in the service.

Several of the leading firms in New York requested this service immediately and we hope it will be an opening wedge for greater confidence and efficiency.

The Newark association has invited us to present this matter at its annual meeting in September.

MUNICIPAL MARKETS

Where farmers' markets were provided for and supported by municipalities as a war measure, they have in nearly all cases continued this year. The city of Trenton opened its second market on July 1, 1919. The Jersey City Chamber of Commerce is now preparing to open an experimental farmers' market in that city. It is surprising to see the quantities of produce quickly sold direct from farmers to housewives at some of these markets.

Farmers' retail market-places have provided the very best method of selling to hundreds of small growers living within easy hauling distance. The wholesale markets, as in Trenton and New Brunswick, provide a greater supply of produce direct from farms by systematizing to some extent the distribution methods, and by inducing a greater number of farmers to haul there because of the increased market facilities. Mr. Hundertmark has represented the bureau in assisting municipalities in establishing and maintaining markets.

MARKET NEWS LETTER

Last year we sent out to several hundred city addresses, including all newspapers, public libraries, women's clubs and individuals, a market letter dealing with foodstuffs in a manner to interest consumers. Retail conditions were found to differ so greatly in different cities that it was decided to put this matter into the hands of a specialist who should devote all of his time to it. Our request for funds for this purpose was not granted, however, and so this year we have enlarged our hay and grain report to cover seasonable market crops, and are now sending it out to some five hundred addresses, all of whom have requested it this year. Joseph Barton, representing the State Horticultural Society on the Advisory Committee to the Bureau of Markets, made an urgent request for special service to consumers in order that city people might be kept in daily touch with crop and market conditions. We are very hopeful that this line of work can be carried on next year.

MARKETS DAY PROGRAM

A whole day's program was given over to marketing subjects during the annual Agricultural Convention in Trenton, January 14-17, 1919.

The morning session was under the chairmanship of Wm. H. Reid of Tennent, Monmouth County. Some eighteen farmers' buying and selling organizations reported on their activities. Mr. C. E. Bassett, of the North American Fruit Exchange and formerly with the Federal Bureau of Markets, spoke on "Farmers' Co-operative Associations in the United States."

There were two sessions in the afternoon: the one on Milk Marketing was presided over by Mr. R. V. Armstrong of Sussex County; and the one on the Commission Business was presided over by Horace Roberts of Moorestown. Mr. W. T. Gerow, vice-president of the New York Booster's Club and associated with Smith and Holden, commission merchants of that city, read an article entitled "Some Problems of the City End of Marketing." Ralph B. Clayberger, ex-president of the National League of Commission Merchants and head of the firm of C. Wilkinson & Company, of Philadelphia, spoke on "Confidence between Farmer and Commission Merchant." A num-

ber of prominent growers of the state continued some of these discussions. Roy C. Potts of the Federal Bureau of Markets took up the general subject of "Market Milk Problems." Mr. J. D. Miller, a director in the Dairymen's League, and Robert Balderston, secretary of the Inter-State Milk Producers' Association, told of the work of these two great marketing organizations. Other leading dairymen brought out points of interest.

In the evening Mr. J. S. Hendrickson of Middletown acted as chairman. George B. Taylor, of the United States Department of Agriculture, provided a moving picture film entitled "Milk and Honey." Mr. Bassett gave a moving picture exhibit showing an advertising feature adopted by the apple growers' associations of the Northwest. Mr. C. A. Musselman, of the Chilton Company of Philadelphia, regional director of the Highway Transport Committee, Council of National Defence, showed moving pictures illustrating the use of motor trucks in market hauling.

AGRICULTURAL WEEK EXHIBITION

The exhibit in the Second Regiment Armory was placed in our hands last year as usual. The Corn Show in charge of Prof. Frank App of the Experiment Station was perhaps the leading feature. A competition of county exhibits drew out many entries, some of very high class. The State Poultry Association inaugurated a 4-day laying contest which excited favorable comment. A small exhibit of fancy apples in market packages caused a number of growers to volunteer their co-operation another year. The State College and Experiment Station staged interesting exhibits. The State Potato Association had a large exhibit. Mr. W. L. Hundertmark made all arrangements for the Armory exhibit, and deserves full credit for its practical usefulness and attractiveness. Mr. W. H. Hamilton made up the booth on "Co-operation and Organization."

DAIRY PRODUCTS MARKETING

Mr. P. B. Bennetch, the specialist in dairy products marketing, came into the bureau July 1, 1918. He is especially well equipped to handle this subject, having had some twelve years' experience in investigational, teaching and county agent work. His work the first

year was necessarily concerned in getting a broad, general understanding of the definite problems concerned in distributing market milk. Close relations have been established with producers' associations and certain points given particular study. His report follows.

Report of the Specialist in Dairy Products Marketing

The dairy industry is one of the most important branches of farming in the state, the value of dairy cattle on January 1, 1919, being estimated by the Bureau of Statistics at \$16,520,400, and the value of milk produced annually at well over \$20,000,000. Most of this milk is consumed as whole milk in the cities of the state as well as in New York and Philadelphia, in addition to the supply shipped into the state from both Pennsylvania and New York.

MILK PUBLICITY

Most consumers have noted the advance in milk prices since the beginning of the war with considerable more alarm than they have noted similar and even more radical advances in the costs of other staple articles of food without, as a rule, taking into consideration the fact that even at these advanced prices milk has been the cheapest animal food available. Milk consumption lagged as a result. In July, 1918, co-operating with the Mercer County Food Administration, of which Mr. J. V. B. Wicoff was administrator, a "Milk Campaign" was inaugurated in Trenton in an effort to increase the use of milk and prevent the waste of good food as the result of a surplus which was then in existence. The county, city and state home demonstration agents also co-operated, and a thorough educational campaign was conducted, emphasizing the relative food value of milk and its importance in the diet. The uses of milk and cottage cheese also were demonstrated before women's organizations all over the city. The services of Dr. E. V. McCollum of Johns Hopkins University, who has done so much to show the importance of increased milk consumption because of the vital elements which it contains,

were secured for a milk luncheon which was attended by the leaders in the campaign. The county agent co-operated.

In May and June, 1919, we co-operated with the State College of Agriculture, represented by the state leader of home demonstration, Mrs. Frank App, and with the United States Department of Agriculture, in 10-day campaigns in Trenton, Newark, Paterson, and Jersey City, during which some very effective publicity was given to the relative cheapness of milk and its value as a food. The necessary finances for these campaigns were secured from the Inter-State Milk Producers' Association, the Dairymen's League and the larger distributors in the respective cities.

In order that the consumer may be kept constantly informed with regard to milk, we believe that a more effective organization of the entire dairy industry in the state is essential. Such work is already being done in certain western states by state units of the National Dairy Council, representing both producers and distributors of milk.

An educational exhibit, consisting of charts and other material, was placed at the Trenton Fair in the fall of 1918, in an endeavor to illustrate the food value of milk and the cost of producing it. The Home Demonstration Office of the State College co-operated in placing the food part of this exhibit.

A state exhibit also was placed at the Milk and Dairy Farm Exposition in New York the week of April 21, 1919. This exhibit showed the cost of producing milk for the two periods, 1914-1917, and the year 1918, based upon data secured in Sussex County, together with charts and photographs showing dairy farm conditions.

CITY DISTRIBUTION

Milk prices have received a great deal of attention from the public press during the past few years, largely because of their increase. Various suggestions have been offered for changes and improvements in present practices of marketing milk. In order that we may have a better knowledge of the complicated problems connected with the market milk business as at present established, so as to overcome impracticable schemes for revolutionary changes in present distribution systems, an investigation of the economic problems connected with marketing fluid milk in the several cities of the state has already been begun. It is believed that this phase of the work is

fundamentally important. No improvement over the present system and methods of city distribution of milk can be instituted or even recommended without first having complete information with regard to the systems at present in use.

It is believed that there are some opportunities for co-operation in distribution by producers in some of the smaller cities in the state where a large number of producers are now distributing their own supply.

Certainly there is an opportunity for effecting very decided economies in distribution in most of the cities of the state. The consumer is insistent that this be done in the interest of cheaper milk and the producer also is interested because with lower prices more milk will be used and consequently there will be less surplus to affect whole-milk prices paid to producers. Both consumers and producers insist that the margin for delivery shall not be greater than is necessary to pay the cost of efficient distribution plus a reasonable profit.

A study is being made also of the various grades of milk sold in the cities and towns of the state, as well as the requirements of the boards of health for producing and hauling the various grades of milk.

CO-OPERATION WITH PRODUCERS' MARKETING ASSOCIATIONS

Most of the producers of milk in the state are now selling their milk through either the Dairymen's League in the New York territory or the Inter-State Milk Producers' Association in the Philadelphia territory, both of which organizations have been of great value to the producers, if they did not actually save the industry from ruin during the period of the war. The principal service rendered by these organizations has been the sale of milk at the fairest possible price as determined by such factors and conditions as affect the prices.

The tendency of these organizations now seems to be to control the country end of the business entirely through ownership of all country shipping stations. The Dairymen's League is already perfecting its organization to put such a plan into effect. As this plan will affect all of the northern half of the state, we are keeping in close touch so that we may be of the greatest possible service in perfecting the plan.

We have maintained close contact with the Inter-State Milk Producers' Association which markets most of the milk in the southern half of the state in an effort to be of service in determining factors, such as supply and demand, which have an effect on price.

A study of the supply and demand for fluid milk and cream in the various cities of the state together with the wholesale and retail prices is being made.

CO-OPERATION WITH THE NEW JERSEY FOOD ADMINISTRATION

The specialist was able to be of some service to the State Food Administration during the last few months of its existence, having been appointed specialist in dairy products and feeds October 3, 1918, by Mr. W. S. Tyler, the State Food Administrator.

A study of all the Food Administration regulations affecting feeds, particularly wheat feeds, was made, followed by a survey of the feed stores and handlers of feed, ascertaining supplies on hand and prices charged. Much data was accumulated which formed the basis of a program among the dealers to correct abuses in the matter of prices, by education where possible and by enforcement where necessary. Questionnaires were sent to all handlers of feeds in the state and proved to be an effective instrument in handling the work.

The shortage of wheat mill feeds in the autumn of 1918 brought about by artificial price fixing which had thrown the high-protein dairy feeds over to other uses by reason of their relative cheapness, gave cause for some concern lest our dairy herds might be found to be without essentials after it should be too late to fill the needs. An effort was therefore made to ascertain stocks on hand in the state. By subsequent regulation finally adopted for the entire country (except drought areas in the West) mills were required to ship supplies of wheat feeds to the several states in relative proportion the same as in previous years.

Co-operating with the Price Committee we kept in close touch with the milk situation in the various cities and towns in the state so as to be in a position to answer and investigate complaints from consumers regarding milk prices.

A questionnaire report blank was sent out to some twenty of the larger milk dealers in different cities for the purpose of determining profits and distribution costs.

We co-operated with the Mercer and Middlesex county food administrations in solving milk price difficulties. We also assisted the Inter-State Milk Producers' Association in Trenton and Princeton in securing for their members uniform prices.

A conference called by Mr. Hoover at Washington on September 28, to consider the stabilization of the price of butter, was attended by the specialist.

MISCELLANEOUS ACTIVITIES

Fourteen farmers' institute meetings in various parts of the state were addressed, together with a number of local meetings of milk producers.

An educational milk and cream contest with 33 entries was held in connection with "Agricultural Week" at Trenton in January. The samples were scored and analyzed by George B. Taylor, of the Dairy Division, United States Department of Agriculture. It is hoped to continue this feature and increase the number of entries next January.

Co-operating with the executive committee of the State Dairymen's Association, a list of speakers was secured for the annual meeting held during "Agricultural Week." The members of this committee have been of service in furnishing advice and suggestions regarding the work to be done, and a meeting was called in Trenton, February 25, when the program of dairy products marketing for the year was approved.

As a result of the agitation regarding milk prices and the difficulties between producers and distributors in the New York territory in January, the Governor appointed a commission of six, including the specialist in the bureau, for the purpose of making an investigation and reporting to the Legislature with recommendations. The other members were: Robert V. Armstrong, Augusta; Theodore M. Roe, Branchville; Charles H. Cook, Trenton; William M. Kroog, Keystone Dairy Company, Hoboken; and Richard McEwan, Whippany. Mr. McEwan was elected chairman at the first meeting held in Trenton. As the Legislature made no provision for funds to pay the necessary expenses of members, the commission idea was given up and the members were invited to act on the Advisory Committee to the Bureau of Markets.

REPORT OF ASSISTANT DIRECTOR OF FARMERS' INSTITUTES

WM. H. HAMILTON

It is the policy of the State Department of Agriculture in directing farmers' institutes in New Jersey to make such meetings fit the needs of the local community in which they are held. The farmers' institute belongs to the farmers of a community. It affords an opportunity for the farmers to come together to discuss their local problems and to have brought to their community practical farmers from other parts of the state and trained agricultural workers to discuss with them their individual and community problems. In carrying out this policy the Department places the responsibility of arranging and conducting meetings with the local community, and the success of the meetings depends very largely upon the degree that this responsibility is assumed.

The arrangements for institute meetings are made through the county boards of agriculture with the assistance of the county agents. The plan used last year is as follows: During August, September and the early part of October the assistant director met with the county agent and executive committee of the county board of agriculture in each county, to make preliminary arrangements for meetings within the county. At these meetings the number of institutes to be held in the county, the approximate time of meetings, and the probable communities in which they would be held were discussed. The county agent, accompanied by the assistant director of institutes as far as time would permit, then met with the community committees of those communities in which institutes would be held. The community committee decided upon the time they wished their institute, the number of sessions desired, and the subjects they wished discussed. In many cases the community committee would designate the speakers wanted and in such cases the Department made every effort to meet their wishes. The State Department secured speakers and furnished programs and posters. The community committees and county agent took the responsibility of local publicity and the actual conducting of the meeting.

SPEAKERS

The Department secured the best speakers available to discuss subjects desired by the various communities. The following speakers were used during the season:

State College of Agriculture

1. Dr. J. G. Lipman, Dean.
2. Prof. L. A. Clinton, Director of Extension.
3. Prof. M. A. Blake, State Leader of Farm Demonstration.
4. Prof. Frank App, Department of Agronomy and Farm Management.
5. Prof. H. R. Lewis, Department of Poultry Husbandry.
6. Prof. J. M. Hunter, Department of Animal Husbandry.
7. Prof. L. E. Hazen, Department of Farm Engineering.
8. Prof. F. G. Helyar, Director of Short Courses.
9. A. M. Hulbert, State Leader of Boys' and Girls' Club Work.
10. Mrs. Frank App, State Leader of Home Demonstration Work.
11. Prof. A. J. Farley, Horticultural Department.
12. Miss Edna Gulick, Home Demonstration Work.
13. Miss Marjory Eells, Home Demonstration Work.
14. J. B. R. Dickey, Extension Specialist in Soils and Agronomy.
15. C. H. Nissley, Extension Specialist in Market Gardening.
16. R. W. DeBaun, Extension Specialist in Market Gardening.
17. J. W. Bartlett, Extension Specialist in Dairying.
18. V. G. Aubry, Extension Specialist in Poultry Husbandry.
19. Dr. L. M. Massey, Extension Specialist in Plant Pathology.
20. I. L. Owen, Superintendent, College Farm.
21. F. A. Carroll, County Agent, Mercer County.
22. W. W. Oley, County Agent, Cumberland County.
23. A. E. Wilkinson, County Agent, Atlantic County.
24. H. R. Cox, County Agent, Camden County.
25. Miss Carolyn F. Wetzell, Home Demonstration Agent, Bergen County.
26. Miss Lauretta P. James, Home Demonstration Agent, Mercer County.
27. Miss Josephine Cramer, Home Demonstration Agent, Middlesex County.
28. Miss Cora Hoffman, Home Demonstration Agent, Morris County.

State Department of Health

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| 1. Dr. R. B. Fitz-Randolph. | 4. Miss Charlotte Ehrlicher, R. N. |
| 2. Miss Eugenia Dubs. | 5. Miss Emily Hamblen. |
| 3. Miss Elizabeth Herring | |

State Department of Education

1. Dr. Calvin N. Kendall, Commissioner.

U. S. Department of Agriculture

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| 1. Prof. W. A. Moorehouse. | 3. A. P. Yerkes. |
| 2. Miss Holbrook. | 4. H. D. Gore. |

State Department of Conservation and Development

1. W. M. Baker, Assistant State Forester.

State Department of Institutions and Agencies

1. W. B. Duryee, Farm Supervisor.

State Department of Agriculture

1. Alva Agee, Secretary.
2. A. L. Clark, Chief, Bureau of Markets.
3. Paul B. Bennetch, Specialist in Dairy Products Marketing.
4. Harry B. Bamford, Transportation Specialist.
5. Dr. T. J. Headlee, State Entomologist.
7. Dr. Mel. T. Cook, State Plant Pathologist.
8. E. G. Carr, Deputy Bee Inspector.

Overseas Speakers

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| 1. Jerome Davis. | 6. Dr. VanOrdin. |
| 2. C. DeVitalis. | 7. Sergeant Gordon Cooper. |
| 3. B. M. Hedrick. | 8. Dr. A. C. McRea. |
| 4. Mrs. M. A. Wilson. | 9. A. C. Roberts. |
| 5. Rev. A. H. Marion. | |

Practical Farmers

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| 1. John H. Hankinson. | 18. B. S. Ells. |
| 2. Fred F. Gardner. | 19. Henry R. Talmage. |
| 3. J. Percy VanZandt. | 20. D. Henniger. |
| 4. H. W. Jeffers. | 21. Earle Dilatush. |
| 5. John W. DeBaun. | 22. John Barclay. |
| 6. John Middleton. | 23. Frank Jones. |
| 7. A. E. Young. | 24. G. B. Brill. |
| 8. J. W. Miller. | 25. H. D. Mount. |
| 9. A. R. Kohler. | 26. G. Scott Voorhees. |
| 10. J. C. Hendrickson. | 27. Geo. T. Reid. |
| 11. Chas. D. Barton. | 28. Col. W. F. Whittemore. |
| 12. Jesse D. Ash. | 29. C. C. Basley. |
| 13. Walter L. Minch. | 30. Wm. Reid. |
| 14. Hugo Kind. | 31. H. F. Hall. |
| 15. E. A. Sexsmith. | 32. C. N. Warner. |
| 16. T. R. Hunt. | 33. C. C. Tallman. |
| 17. C. B. Lewis. | 34. John Casazza. |

Miscellaneous

1. Walter H. Havens, Master, New Jersey State Grange.
2. Mrs. Rose Morgan, New York City.
3. Miss Sarah B. Askew, Public Library Commission.
4. N. E. Garber, County Agent, Bucks County, Pa.
5. Lucy Oppen, Child Welfare Organization, New York City.
6. Prof. R. B. Cooley, Extension Professor of Dairy Husbandry, Mass.

7. Dr. Thomas Manns, Plant Pathologist, Del.
8. Seth T. J. Bush, Secretary, New York Federation of Agriculture.
9. Dr. Forrest E. Dager, Philadelphia.
10. Miss Agnes Miller, Base Hospital Library, Camp Dix.
11. Miss Heilman, Librarian, Morristown.
12. Dr. Warren H. Wilson, Teachers' College, Columbia University.
13. Rev. R. M. West, Secretary, New Jersey State Baptist Convention.
14. Reese V. Hicks, Chairman, National War Emergency Poultry Federation.
15. W. S. Tyler, State Food Administrator.
16. B. S. Bowdish, Secretary, New Jersey Audubon Society.
17. Prof. E. S. Savage, Department of Animal Husbandry, Cornell University.
18. H. W. Collingwood, Editor Rural New-Yorker.

The fact that there is such a great diversity of agricultural conditions throughout the state, and also that an effort is made to meet the wishes of local communities, renders it impossible or inadvisable to have a small corps of institute speakers to be sent from one meeting to another on a hard and fast schedule.

The method used in securing speakers to fit a definite community gives greater satisfaction. The state is fortunate in having a large number of practical, successful farmers who are willing to render service by giving their experiences at the institute meetings. In addition to these men, the State College of Agriculture and Experiment Stations have co-operated with the Department in giving the services of their scientists and specialists as speakers at institute meetings.

MEETINGS

While all local or county meetings receiving assistance from the State Department of Agriculture are classed as institutes, still there are a number of distinct types of meetings. The Department secured speakers for annual and other meetings of the county boards of agriculture. Such meetings are county-wide in nature.

Last year one-session institutes were held for the first time. Monmouth, Ocean, and Atlantic counties made use of such meetings, where not more than two subjects were discussed. In Monmouth County five of these meetings were made potato meetings, and a great deal of interest was aroused in better seed. In Gloucester and Cumberland counties two-day meetings were held, while in all other cases one-day meetings of two or three sessions were held. At two- and three-session meetings the evening session is usually given over to talks of a general and inspirational nature. Considerable use was made of talks by overseas men at evening sessions. The practice

of holding separate sessions for women wherever they were desired was again followed out with good results.

Institute meetings were held at the following places:

November	November
12 Toms River.	21 Montague.
14 Pennington.	21 Medford.
15 Roseland.	22 Tranquility.
19 Branchville.	23 Cape May Court House.
19, 20 Mullica Hill.	23 Somerville.
20 Layton.	29 Mt. Freedom.
20 Hackettstown.	30 South Branch.
December	December
3 Stillwater.	13, 14 Vineland.
5 Belvidere.	14 New Brunswick.
5 Mount's Crossing.	14 Allentown.
6 Morristown.	14 Herbertsville.
7 Vincentown.	14 Mount Holly, Burlington County Farmers' Exchange.
7 Freehold.	18 Leesburg.
10 Marlton.	19 Woodstown.
10 New Egypt.	19 Cedarville.
11 Haddonfield.	21 Hightstown.
11, 12 Shiloh.	21 Caldwell.
12 Washington-Brass Castle.	28 Tuckahoe.
12 Mays Landing.	28 Belle Plain.
13 Belle Mead.	
January	January
3 Hackensack.	20 Landisville.
6 Sergeantsville.	21 Leeds Point.
6 Blue Anchor.	21 Hightstown. Giant Potato Grow- ers' Association.
8 Harmony.	22 Dayton.
9 Ringoes.	22 Harmersville.
10 Mount Holly.	23 Columbus.
10 Blackwood.	25 Plainsboro.
10 Long Valley.	27 Richfield.
11 Franklin Park.	29 Lambertville.
13 Manahawkin.	31 Hanover Neck.
20 New Vernon.	
February	February
5 Berlin.	15 Norma.
6 Springfield.	15 Pattenburg.
7 Hopewell.	19 Trenton.
8 Elmer.	20 New Monmouth.
10 Farmingdale.	20 Westfield.
11 Ramsey.	25 Tinton Falls.
12 Hammonton.	25 Holmdel.
12 Beverly.	26 Moonachie.
13 Bargaintown.	26 Farmingdale.
14 Moorestown.	26 Imlaystown.
14 Oak Road.	27 Englishtown.

March	March
1 Egg Harbor.	12 Cold Springs.
6 Clark Township.	12 Clarksburg.
6 Spring Mills.	13 Salem.
8 Franklin Park.	21 Westwood.
10 Wall.	22 Mountain View.

ATTENDANCE

The following tabulation shows by counties the number of meetings, number of sessions and attendance. It will be noted that during the year 92 meetings of 230 sessions were held, with a total attendance of 16,016.

COUNTIES	Number of Meetings	Number of Sessions	AVERAGE ATTENDANCE		Total
			Per Meeting	Per Session	
1. Atlantic	7	11	54.5	34.7	382
2. Bergen	4	11	206.0	75.0	824
3. Burlington	8	20	255.0	102.0	2,040
4. Camden	4	12	102.5	34.2	410
5. Cape May	4	9	103.0	45.8	412
6. Cumberland (6 days) ..	4	16	290.2		
			193.5 per day	72.5	1,161
7. Essex	2	4	140.0	72.0	280
8. Gloucester	1	5	395.0		
			197.5 per day	79.0	395
9. Hunterdon	5	17	155.0	45.6	775
10. Mercer	6	20	540.8	162.2	3,245
11. Middlesex	5	15	204.4	68.1	1,022
12. Monmouth	11	16	133.5	92.0	1,470
13. Morris	5	12	132.6	55.2	663
14. Ocean	6	8	75.6	56.7	454
15. Passaic	2	5	247.5	99.0	495
16. Salem	5	14	137.0	49.0	685
17. Somerset	3	10	107.3	32.2	322
18. Sussex	4	12	115.0	38.2	459
19. Union	3	4	60.0	45.0	180
20. Warren	3	9	114.0	38.0	342
	92	230	175.1	70.0	16,016

While the influenza epidemic caused the cancellation of two meetings, and undoubtedly kept down the attendance at a great many others, nevertheless the attendance was very good. Also, of still greater importance, the interest shown was excellent.

It is impossible to measure the results accomplished through the institute work. However, a definite case may be indicative of the good done.

At the Roseland meeting in Essex County the committee asked for a speaker on co-operation. This was furnished and as a result of the discussion a request was made for the chief of the Bureau of Markets to be present at their annual county board meeting held a month later. At this meeting definite plans were made for the organization of the Essex County Farmers' Exchange, which has already saved hundreds of dollars for Essex County farmers.

For the success of last season's institutes much credit is due to the county agents, who helped greatly in making local arrangements and giving publicity to meetings in their respective counties; to executive committees and community committees of county boards of agriculture in planning and conducting their meetings; and to the men and women who rendered service as speakers.

REPORT OF BUREAU OF STATISTICS AND INSPECTION

FRANKLIN DYE, *Chief*

In the report of this bureau for the year ending June 30, 1918, reference was made to a proposed circular for advertising some of the farms offered for sale in New Jersey. This circular, No. 23, has since been printed, and contains a list of 86 farms for sale, also a map of the state and other matter comprising 39 pages. For this circular there is a continuous demand. It has been sent to Virginia, New York City and New York State, the intermediate and far-western states and to Canada; in all 190 copies have been distributed. In cases requiring more detailed information than is contained in the circular, the booklet entitled "Farm Lands of New Jersey" was included. A special information letter was also sent to most applicants.

For the annual meeting of the State Board of Agriculture last January a paper entitled "The Inspection Service: Origin, Progress, Requirements," was prepared and read. Two circulars, No. 27, containing crop statistics for the year 1918, the reports of county boards of agriculture and a list of the granges in the state; and a special circular containing information of value on various subjects of interest to farmers, have been prepared and are in the printer's hands.

CROP REPORTS

In the matter of collecting statistics of farm crops, production and value, we are indebted to the volunteer reporters who cover practically every farming community in the state, and the thanks of the bureau is hereby extended to them for their co-operation. Their reports are sent to the office the last of each month. From those returns averages are made and published at the end of the month and distributed to approximately 2,500 persons, newspapers and institutions. It is chiefly from those reports, also, that our annual report of crop yields and values for the entire state is made. Such a report was prepared for the year 1918 and may be found in cir-

cular 27. This report shows the total value of the crops reported as \$112,444,685, exceeding the value for any preceding year. The total value of farm livestock (horses, mules, milch cows, other cattle, sheep, swine, and chickens) is \$43,558,500.

For the current year reports have been made for the months of January, March, April, May and June. The report for the month of June on crop conditions seems to justify the expectation of an average good yield throughout the state for the year 1919. (See Report of Statistical Service by H. B. Weiss following.)

Details of the work of the inspectors in the inspection service, covering that of the state entomologist, including bee inspection; the investigations of the state plant pathologist and chief inspector, H. B. Weiss, are given in their reports which follow.

Plant diseases are many, and, like human ailments, are always with us. If they can be kept from increasing, a most valuable service will be rendered, and this is the work committed to the state plant pathologist. In addition to the injurious insects that have been with us for many years, others, new to our state, are brought in from time to time on stock imported from foreign countries, and such if not detected on arrival soon become established. A case in point is the Japanese beetle. When they are discovered and their character and life history determined, an additional force of inspectors becomes necessary in order to control, and, if possible, stamp out the new enemy. Constant vigilance on the part of the inspectors of the bureau is necessarily maintained in order to discover, hold in check or destroy such pests. There seems, therefore, no immediate prospect of a reduction in the number of inspectors but rather an increase if we are to combat successfully the insidious army of insects injurious to all farm crops. It would be well to have these facts in mind when the next appeal for funds is made to the appropriation officials of the next legislature.

Report of the Statistical Service

HARRY B. WEISS, *Chief Inspector*

During the past fiscal year, satisfactory progress was made in our crop reporting work. The number of reporters was increased from 462 to 542 and much credit for our progress is due to the voluntary services of these men.

One of the main objects of crop estimates is to give us a bird's-eye view of a large number of facts. The human mind is so constituted that it cannot comprehend a large number of distinct impressions at any one time. Thus, extensive and complex masses of isolated instances must be reduced to a form which will be comprehensible to most persons. After simplification of the facts, they are in a shape where they may be used for comparative purposes. For instance, we are interested in the size of the potato crop in New Jersey not out of idle curiosity, but so that its size one year can be compared with that of other years, or so that the production can be compared with that of other states, so that plans can be made for its disposal, so that the state's resources along this line will be known, so that increases or decreases in acreage will be known, and for many other reasons connected more or less intimately with the desirability of having accurate knowledge of such an important subject as the nation's food supply.

In addition to the usual estimates dealing with condition, acreage and total production, eight of our monthly reports contained informational charts dealing with production and value of certain New Jersey crops over a period of years, egg production, county acreages, carlot shipments of farm products, livestock, farm lands, average acreages of crops on potato and dairy farms, cost of milk production and illustrated warnings of the European corn borer, potato wart disease and periodical cicada.

SCOPE OF CROP REPORTS

The following tables show in a condensed form the scope of our monthly reports during an entire year. The following key will enable one to determine just what is published each month.

- a, acreage to be harvested expressed in percentage or number.
- as, acreage sown expressed in percentage or number.
- c, condition expressed in percentage.
- ep, percentage of egg production.
- f, final estimate of total production, number and value.
- m, mortality.
- n, number expressed in terms of percentage and otherwise.
- p, average prices received by farmers.
- pr, production percentage.
- pd, percentage done.
- pn, percentage abandoned.
- pl, percentage of last year's crop on farms.
- t, total production percentage.
- v, values of farm lands.
- w, wages of male farm labor.
- y, yield.

SCOPE OF CROP STATISTICS

CROPS	Jan.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Corn		pl.			a.	c.	c.	c.	c.	y.	p.f.
Wheat		pl.	c.	pm.a.c.	c.	c.		y.		as.	p.f.
Oats		pl.			a.c.	c.	c.	c.	y.		p.f.
Rye			c.	a.c.	c.	c.		y.		as.	p.f.
Hay				pl.c.	c.	c.	a.	y.			p.f.
Pasture				c.	c.	c.	c.	c.			
Potatoes					a.c.	c.	c.	c.	c.	y.	p.f.
Sweet Potatoes..					a.	c.	c.	c.	c.	y.	p.f.
Tomatoes					a.c.	c.a.	c.	c.	t.y.		
Peas					a.c.	c.					
Onions					c.	c.	c.	t.	y.		
Apples					c.	c.	c.	c.	c.	t.	p.f.
Peaches					c.	c.	c.		t.		f.
Pears					c.	c.	c.	c.	c.	t.	f.
Blackberries and Raspberries ..					c.	c.	t.				
Strawberries ...					c.	t.					
Cabbage						c.	c.	c.	y.t.		
Buckwheat							c.a.	c.	c.	y.	p.f.
Cranberries								c.	c.	t.y.	p.f.

SCOPE OF LIVESTOCK STATISTICS

LIVESTOCK ETC.	Jan.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Horses	n.p.f.		c.m.								
Mules	n.p.f.		c.m.								
Milch cows ..	n.p.f.										
Cattle	n.p.f.		c.								
Sheep	n.p.f.		c.m.								
Swine	n.p.f.		c.m.								
Milk	pr.										
Wages (farm labor)	w.										
Poultry	n.ep.f.	ep.	m.ep.n.	ep.	ep.	ep.	ep.n.	ep.	ep.	ep.	ep.p.
Farm lands...	v.										
Plowing				pd.							
Sowing				pd.							
Bees				n.c.							
Colts					n.						
Calves					n.						
Honey plants,				c.							
Honey								y.			

STATE DEPARTMENT OF AGRICULTURE
TRENTON, N. J.

ALVA AGEE, SECRETARY

BUREAU OF STATISTICS AND INSPECTION
MONTHLY CROP REPORT

SUMMARY OF CROP CORRESPONDENTS' ESTIMATES FOR ENTIRE STATE, DECEMBER 2, 1918

AVERAGE PRICE NOVEMBER 30, 1918

(This means the price which farmers receive at the home markets, county towns and local railroad stations.)

Corn—per bushel of 56 lbs. (shelled),	2.13	Hay (loose)—per ton of 2000 lbs.,	\$26.80
Wheat—per bushel of 60 lbs.,	.83	Hay (baled)—per ton of 2000 lbs.,	30.60
Oats—per bushel of 32 lbs.,	1.67	Salt Hay (loose)—per ton of 2000 lbs.,	13.40
Rye—per bushel of 56 lbs.,	1.75	Salt Hay (baled)—per ton of 2000 lbs.,	16.00
Buckwheat—per bushel of 48 lbs.,	1.59	Cranberries—per barrel,	8.40
Potatoes (white)—per bushel of 60 lbs.,	1.74	Eggs—per dozen,	.77
Sweet Potatoes—per bushel,	1.50	Chickens—Roasters (live weight), per lb.,	.35
Apples—per bushel of 48 lbs.,	.420	Chickens—Fowls (live weight), per lb.,	.32
Apples—per barrel,			

POULTRY ON COMMERCIAL PLANTS

Egg production for November,	15 per cent.
(100 per cent. equals 1 egg per day per hen during period reported for.)	
Eggs (white)—per dozen,	.94
Eggs (brown)—per dozen,	.84

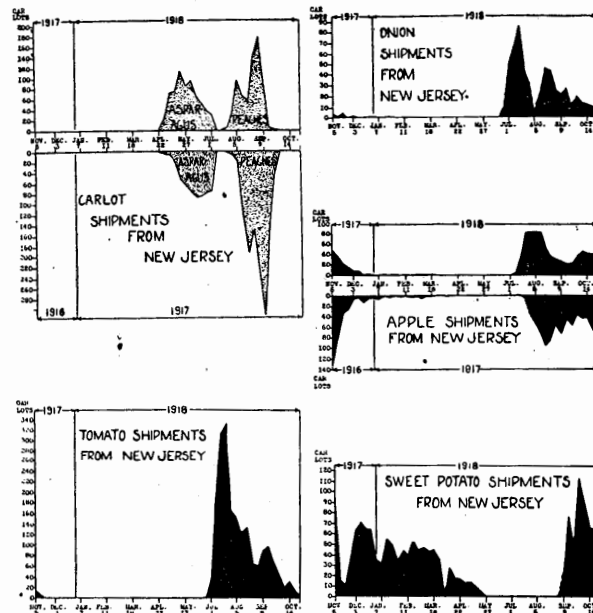
FINAL ESTIMATES OF NEW JERSEY CROPS

CROP	Acres, 1918	Bu. per Acre, 1918	Total Production 1918	Total Production 1917	Price, Nov. 30, 1918	Total value, 1918 (Nov. 30 Price Basis)
Corn,	309,000	40	12,360,000 bu.	11,880,000 bu.	\$1.38	\$17,057,000.00
Wheat,	91,000	18	1,638,000 bu.	1,658,700 bu.	2.13	3,489,000.00
Rye,	74,000	18.5	1,369,000 bu.	1,330,000 bu.	1.67	2,286,000.00
Oats,	71,000	38	2,698,000 bu.	2,208,000 bu.	.83	2,238,000.00
Buckwheat,	17,000	17	289,000 bu.	319,000 bu.	1.75	506,000.00
Hay (tame),	350,000	1.5 tons	525,000 tons	534,000 tons	26.80	14,070,000.00
Potatoes,	86,000	100 bu.	8,600,000 bu.	10,264,000 bu.	1.59	13,674,000.00
Sweet Potatoes,	22,000	116 bu.	2,552,000 bu.	2,392,000 bu.	1.74	4,444,000.00
Cranberries,	11,000	11 bbls.	121,000 bbls.	122,000 bbls.	8.40	1,016,000.00
Honey,	24,000	70 lbs. per col.	1,680,000 lbs.	241,500 lbs.	.28	201,600.00
Peaches,			805,000 bu.			
Apples,			2,573,800 bu.			
Pears,			618,000 bu.			

* Revised estimate.

Facsimile of December 1918 Crop Report and a few of its charts

CARLOT SHIPMENTS OF FARM PRODUCTS FROM NEW JERSEY*



* Plotted from information in Weekly Summary Sheets of U. S. Bureau Markets.

STATE DEPARTMENT OF AGRICULTURE
TRENTON, N. J.

ALVA AGEE, SECRETARY.

BUREAU OF STATISTICS AND INSPECTION
MONTHLY CROP REPORT

SUMMARY OF CROP CORRESPONDENTS' ESTIMATES FOR ENTIRE STATE, JANUARY 1, 1919

Horses (excluding colts)—Number of horses January 1, 1919, compared with January 1, 1918,	98 per cent.
Horses (excluding colts)—Average price per head January 1, 1919, compared with January 1, 1918,	\$155.00
Mules (excluding colts)—Number of mules January 1, 1919, compared with January 1, 1918,	98 per cent.
Mules (excluding colts)—Average price per head January 1, 1919, compared with January 1, 1918,	\$167.00
Milk cows—Number of milk cows January 1, 1919, compared with January 1, 1918,	98 per cent.
Milk cows—Average price per head January 1, 1919, compared with January 1, 1918,	\$117.00
Milk—Production for year (average per cow),	5,000 pounds.
Other cattle—Number of other cattle January 1, 1919, compared with January 1, 1918,	99 per cent.
Other cattle—Average price per head January 1, 1919, compared with January 1, 1918,	102 per cent.
Sheep—Number of sheep January 1, 1919, compared with January 1, 1918,	102 per cent.
Sheep—Average price per head January 1, 1919, compared with January 1, 1918,	\$19.00
Swine (all ages)—Number of swine January 1, 1919, compared with January 1, 1918,	107 per cent.
Swine—Average price per head January 1, 1919, compared with January 1, 1918,	\$30.00

POULTRY ON COMMERCIAL PLANTS

Egg production for December,	19 per cent.
(100 per cent. equals 1 egg per day per hen during period reported for.)	

ESTIMATED NUMBER AND VALUE OF FARM ANIMALS IN NEW JERSEY

	Number	Value per head	Total Value
Horses,	87,400	\$155.00	\$13,547,000.00
Mules,	3,800	167.00	634,600.00
Milk cows,	141,200	117.00	16,530,400.00
Other cattle,	64,000	66.00	4,224,000.00
Sheep,	27,500	19.00	\$522,500.00
Swine,	164,000	30.00	4,920,000.00

REMARKS

Reports from correspondents indicate an increase of 7 per cent in the number of swine and an increase of 2 per cent in the number of sheep. Other animals show a slight decrease in numbers. Reports from 49 tomato packers showed that 153,000 tons of New Jersey tomatoes were used during the past season. During the season of 1917, 56 packers reported a tonnage of 106,254.

No crop report will be issued during February

January 4, 1919.

AGRICULTURAL WEEK, TRENTON, JANUARY 14, 15, 16, 17, 1919.

Facsimile of January 1919 Crop Report

STATE DEPARTMENT OF AGRICULTURE
TRENTON, N. J.

ALVA AGEE, SECRETARY

BUREAU OF STATISTICS AND INSPECTION
MONTHLY CROP REPORT

SUMMARY OF CROP CORRESPONDENTS' ESTIMATES FOR ENTIRE STATE, JUNE 1, 1919

(100 per cent. represents a normal condition of growth and vitality giving promise of a full yield per acre.)

Wheat, condition,	100 per cent.
Rye, condition,	100 per cent.
Oats, acreage this season compared with acreage last season,	98 per cent.
Oats, condition,	96 per cent.
Hay (all), condition,	91 per cent.
Pasture, condition,	92 per cent.
Corn, acreage this season compared with acreage last season,	100 per cent.
Potatoes (white), acreage this season compared with acreage last season,	97 per cent.
Potatoes (white), condition,	86 per cent.
Sweet Potatoes, acreage this season compared with acreage last season,	108 per cent.
Tomatoes (early), acreage this season compared with acreage last season,	81 per cent.
Tomatoes (early), condition,	100 per cent.
Peas, acreage this season compared with acreage last season,	100 per cent.
Peas, condition,	87 per cent.
Onions, condition,	91 per cent.
Apples, condition,	91 per cent.
Peaches, condition,	81 per cent.
Pears, condition,	74 per cent.
Blackberries and Raspberries, condition,	60 per cent.
Strawberries, condition,	97 per cent.
Strawberries, condition,	87 per cent.

Egg production for May (commercial plants),

(100 per cent. equals 1 egg per day per hen during period reported for.)

ESTIMATED ACREAGE AND TOTAL PRODUCTION.

	1918.	1919. Preliminary	1918. Final Estimate.	1919. Estimate Based on June 1 Condition.
Wheat,	91,000	98,000	1,638,000 bu.	2,207,000 bu.
Rye,	74,000	74,000	1,369,000 bu.	1,480,000 bu.
Oats,	78,000*	76,000	2,698,000 bu.*	2,517,000 bu.
Potatoes,	80,000	86,000	8,600,000 bu.*	
Corn,	294,000*	294,000	11,760,000 bu.*	
Sweet Potatoes,	22,000	24,000	2,552,000 bu.	
Hay,	350,000	350,000	525,000 tons	532,000 tons.

* Revised.

The condition June 1 forecasts the production of 2,507,000 bushels of apples, 921,000 bushels of peaches and 575,000 bushels of pears. The peach prospect is much better in the southern half of the State than in the northern. The brown rot situation has improved, and the present condition indicates

Report of the Inspection Service

Plant Inspection

THOMAS J. HEADLEE, PH.D., *State Entomologist*

MEL. T. COOK, PH.D., *State Plant Pathologist*

HARRY B. WEISS, *Chief Inspector*

The following report is a summary of the bureau's inspection activities during the twelve months' period from July 1, 1918, to June 30, 1919.

FOREIGN NURSERY STOCK INSPECTED

During the past fiscal year 5,459 cases of foreign nursery stock were imported into New Jersey and inspected. The following tables show the countries of origin, number of cases and pests found:

TABLE 1

SUMMARY OF FOREIGN NURSERY STOCK INSPECTED

COUNTRY	Shipment	Cases
Belgium	11	1,052
Bermuda	4	9
Brazil	2	44
England	31	277
France	17	63
Guatemala	4	12
Holland	214	3,224
Ireland	2	11
Japan	7	67
Mexico	1	2
Scotland	7	93
Trinidad	1	256
U. S. Columbia	5	256
Venezuela	5	93
Totals	311	5,459

PESTS FOUND ON FOREIGN STOCK

From Holland

Oyster-shell scale on 12 shipments of boxwood.
Leucanium corni (scale) on 4 shipments of boxwood.
 Red spider on 1 shipment of boxwood.
Psyllia buxi (jumping plant lice) on 17 shipments of boxwood.
 Aphis eggs on 3 shipments of Japanese maple.
Gracilaria azaleæ (leaf roller) on 1 shipment of azaleas.
 Lace bug eggs on 1 shipment of rhododendrons.
 Crown gall on 1 shipment of azaleas.
 Crown gall on 1 shipment of roses.
Botrytis cinerea on 7 shipments of rhododendrons.
Fusarium sp. on 1 shipment of narcissus.
Puccinia graminis on grass packing around 1 shipment.

From England

Aphis eggs on 1 shipment of apple stock.
 Oyster-shell scale on 1 shipment of apple stock.
 Mite eggs on 1 shipment of apple stock.
Aspidiotus hederae (scale) on 1 shipment of orchids.

From Scotland

Aspidiotus hederae (scale) on 1 shipment of palms.

STOCK FROM OTHER STATES

TABLE 2

STOCK SHIPPED INTO NEW JERSEY FROM OTHER STATES

(According to notices received from transportation companies)

STATE	Express Shipments	Freight Shipments	Parcel Post	Carloads
Alabama		3		
Connecticut	4	30		4
Delaware		20		1
Indiana		3		
Illinois	1	1		
Iowa	1	1		
Kansas		4		
Maryland	16	153		5
Massachusetts	31	51	5	2
Michigan	1			
Missouri	163	51	92	
Maine		5		
New Hampshire	1	1		2
Nebraska	1	2		
New York	268	199		6
Ohio	8	16		
Pennsylvania	13	91		3
Rhode Island		35		
Tennessee		4		
Virginia		3		
New Jersey		20		1
	508	693	97	24

TABLE 3

DOMESTIC STOCK INSPECTED

STATE	Cases	Carloads	Number of Shipments Infested With Crown Gall	Number of Trees Condemned (Mostly Apple)
Alabama	3			
Connecticut	21	4	1	527
Delaware	19	1	2	110
Indiana	3		2	213
Illinois	1			
Kansas	4			
Maryland	144	5	38	2,022
Missouri	26		7	194
Maine	5			
New Hampshire	1	2		
Nebraska	1			
New York	142	5	30	872
Ohio	15		2	109
Pennsylvania	45	2	9	465
Rhode Island	35			
Tennessee	3			
Virginia	3			
New Jersey	20	1	5	140
	542	22	98	4,652

As shown by Table 3, 4,652 trees in 98 shipments were condemned on account of crown gall. This means that 98 fruit growers were saved from paying for these trees. In addition to this they were saved the labor and expense connected with the plant and care of these trees until such a time as their worthlessness became apparent. That this work is known and appreciated is shown by the numerous requests for inspection, received from persons purchasing fruit stock from outside the state.

INSPECTION OF NURSERIES

This important phase of the bureau's duties is carried on during July, August and September and consists in the examination and certification of stock growing in the nurseries of the state. During this time the stock on 146 establishments was inspected. Eighty-two of these were found clean at the first inspection. The remainder were infested in varying degrees, mostly slight, and orders were given for the destruction and treatment of infested stock. These were followed and on June 30, 1919, a total of 173 firms had received certificates, of which number 27 were dealers, whose sources of stock were satisfactory. A list of the insect pests commonly met with in nurseries will be found in circular 26 of the State Department of Agriculture and need not be repeated here. The common diseases of nursery stock, both fruit and ornamental, have been treated in circulars 35, 98, and 97 of the New Jersey Agricultural Experiment Stations. Nineteen firms went out of business during the year, most of whom were berry nurseries in the southern part of the state. Reasons given were lack of demand for plants and more profitable employment elsewhere.

A list of the firms holding certificates follows:

HOLDERS OF CERTIFICATES FOR 1918

Number

- 1—Henry A. Dreer, Inc., (General, Sept. 2) Riverton.
- 2—Bobbink & Atkins, (General, Sept. 2) Rutherford.
- 3—J. Murray Bassett, (General, Sept. 2) Hammonton.
- 4—John McCleary & Son, (General, Sept. 2) Sewell.
- 5—F. & F. Nurseries, (General, Sept. 2) Springfield.
- 6—Charles Black, (General, Sept. 2) Hightstown.
- 7—Jos. H. Black, Son & Co., (General, Sept. 2) Hightstown.
- 8—Samuel C. DeCou, (General, Sept. 2) Moorestown.
- 9—Chestnut Hill, (General, Sept. 2) Montclair.
- 10—DeBaun & Co., (General, Sept. 2) Wyckoff.
- 11—K. E. DeWaal Malefyt, (General, Sept. 2) Ridgewood.
- 12—Arthur J. Collins & Son, (General, Sept. 2) Moorestown.
- 13—John Bennett, (General, Sept. 2) Atlantic Highlands.
- 14—K. M. Van Gelderen, (General, Sept. 2) Long Branch.
- 15—Henry F. Morris, (General, Sept. 2) Collingswood.
- 16—Henry E. Burr, (General, Sept. 2) East Orange.
- 17—George H. Peterson, Inc., (Rose, Sept. 2) Fairlawn.
- 18—Madsen & Christensen, (General, Sept. 2) Woodridge.
- 19—Charles L. Stanley, (General, Sept. 2) Plainfield.
- 20—Croes Brothers, (General, Sept. 2) Warren Point.

Number

- 21—A. B. Vanderbeek, (General, Sept. 2) Paterson.
- 22—Thomas Heminsley, (General, Sept. 2) So. Paterson.
- 23—A. J. Stolz, (General, Sept. 2) Clifton.
- 24—Mrs. J. Wolff & Sons, (General, Sept. 2) Clifton.
- 25—David V. Higgins, (Peach, Sept. 2) Ringoes.
- 26—Goeller Brothers, (General, Sept. 2) Trenton.
- 27—T. C. Kevitt, (General, Sept. 2) Athenia.
- 28—Mrs. W. S. Herzog, (General, Sept. 2) Morris Plains.
- 29—Red Towners Nurseries, (General, Sept. 2) Hackensack.
- 30—Frank Koehler, (General, Sept. 2) Camden.
- 31—Harold Hornor, (General, Sept. 2) Mount Holly.
- 32—Willard H. Rogers, (General, Sept. 2) Mount Holly.
- 33—Charles A. Bennett, (General, Sept. 2) Robbinsville.
- 34—William Tricker, (General, Sept. 2) Arlington.
- 35—J. H. Friesser, (Greenhouse, Sept. 2) North Bergen.
- 36—E. Jacobi, (Greenhouse, Sept. 2) Irvington.
- 37—G. F. Neipp, (Greenhouse, Sept. 2) Chatham.
- 38—Henry Schmidt, (Greenhouse, Sept. 2) Weehawken.
- 39—Joseph Manda, (Greenhouse, Sept. 2) West Orange.
- 40—Charles H. Totty, (Greenhouse, Sept. 2) Madison.
- 41—W. G. Badgley, (Greenhouse, Sept. 2) Chatham.
- 42—S. A. Nadler, (Greenhouse, Sept. 2) Rutherford.
- 43—John DeBuck, (Greenhouse, Sept. 2) Secaucus.
- 44—Emile N. Savoy, (Greenhouse, Sept. 2) Secaucus.
- 45—Charles Schneider, (Greenhouse, Sept. 2) Little Silver.
- 46—Henry Pfeiffer, (General, Sept. 2) Cologne.
- 47—W. F. Lacroix, (Lilac, Sept. 2) Buena.
- 48—Watkins & Nicholson, (General, Sept. 2) Hammonton.
- 49—W. P. Howe, (General, Sept. 2) Pennington.
- 50—New Brunswick Nurseries, (General, Sept. 2) New Brunswick.
- 51—M. Bredmeyer, Middlebush Rosary, (General, Sept. 2) Middlebush.
- 52—Secaucus Exotic Nurseries, (General, Sept. 2) Secaucus.
- 53—Michael N. Borgo, (General, Sept. 2) Blue Anchor.
- 54—Benjamin Barrett & Son, (General, Sept. 2) Blue Anchor.
- 55—W. Grant Schoenly, (General, Sept. 2) Dayton.
- 56—James M. Ralston, (General, Sept. 2) Allenhurst.
- 57—William O'Hagan, (General, Sept. 2) Asbury Park.
- 58—James Ambacher, (General, Sept. 2) West End.
- 59—Mathew O'Hagan, (General, Sept. 2) Asbury Park.
- 60—Max Rumprecht, (General, Sept. 2) Fort Lee.
- 61—H. C. Steinhoff, (General, Sept. 2) W. Norwood.
- 62—John Ryan, (General, Sept. 2) Basking Ridge.
- 63—Charles A. Baird, (General, Sept. 2) Arlington.
- 64—Wm. L. Flavelle, Caldwell Nurseries, (General, Sept. 2) Caldwell.
- 65—A. S. Wallace, (General, Sept. 2) Montclair.
- 66—August Dressel, (General, Sept. 2) Plainfield.
- 67—Amon Heights Nurseries, (General, Sept. 2) Camden.
- 68—A. G. Freer, (General, Sept. 2) Manasquan.
- 69—A. D. Russel Est., (Greenhouse, Sept. 2) Princeton.
- 70—Frank Marra, (Privet, Sept. 2) Little Silver.
- 71—Angelo Quarella, (Privet, Sept. 2) Hammonton.

Number

- 72—Harry B. Edwards, (Privet, Sept. 2) Little Silver.
- 73—C. E. Field, (Strawberry, Sept. 2) Sewell.
- 74—Seabrook Farm Company, (Strawberry, Sept. 2) Bridgeton.
- 75—George Liepe, (Strawberry, Sept. 2) Cologne.
- 76—Walter R. Shoemaker, (Strawberry, Sept. 2) Swedesboro.
- 77—Willard B. Kille, (Strawberry, Sept. 2) Swedesboro.
- 78—John F. Leeds, (Berry, Sept. 2) Waterford.
- 79—Joseph J. White, Inc., (Blueberry, Sept. 2) New Lisbon.
- 80—W. H. L. Openshaw, (Berry, Sept. 2) Atco.
- 81—Frank Scamoffo, (Berry, Sept. 2) Hammonton.
- 82—James V. Clark, (Berry, Sept. 2) Cape May.
- 83—Elizabeth Nursery Co., (General, Sept. 4) Elizabeth.
- 84—Hugo Kind, (General, Sept. 4) Hammonton.
- 85—Duke Park Nurseries, (General, Sept. 4) Somerville.
- 86—S. A. Rogers Nursery Co., (General, Sept. 4) Newark.
- 87—Benjamin Connell, (General, Sept. 4) Merchantville.
- 88—Charles Momm & Son, (General, Sept. 4) Irvington.
- 89—W. A. Manda, Inc., (General, Sept. 4) South Orange.
- 90—George A. Steel, (General, Sept. 4) Eatontown.
- 91—Princeton Nurseries, (General, Sept. 4) Princeton.
- 92—Lager & Hurrell, (Orchid, Sept. 7) Summit.
- 93—Samuel Brant, (Peach, Sept. 9) Madison.
- 94—John F. Randolph, (General, Sept. 10) Rutherford.
- 95—Julius Roehrs Co., (General, Sept. 10) Rutherford.
- 96—Wm. Henry Maule, Inc., (Dealer's, Sept. 10) Hightstown.
- 97—Clarence B. Fargo, (Dealer's, Sept. 10) Frenchtown.
- 98—W. C. & C. Emory, (Dealer's, Sept. 10) Irvington.
- 99—S. E. Kaufman, (Dealer's, Sept. 10) Trenton.
- 100—E. Decker & Sons, (Dealer's, Sept. 10) East Orange.
- 101—Paul L. Heggan, (Dealer's, Sept. 11) Waterford.
- 102—Mrs. E. P. McColgan, (General, Sept. 12) Red Bank.
- 103—J. T. Lovett, (General, Sept. 12) Little Silver.
- 104—F. W. Woolworth Co., (Dealer's, Sept. 14).
- 105—J. G. & A. Esler, (Dealer's, Sept. 14) Saddle River.
- 106—Minch Bros., (Dealer's, Sept. 14) Bridgeton.
- 107—George A. Shultz, (Peach, Sept. 14) Jamesburg.
- 108—Friedrich Eicke, (Dealer's, Sept. 16) Rahway.
- 109—Warren Shinn, (Dealer's, Sept. 16) Woodbury.
- 110—William S. Rose, (General, Sept. 16) Red Bank.
- 111—W. C. Evans, (Dealer's, Sept. 18) Glassboro.
- 112—Alex. E. Wetherbee, (Dealer's, Sept. 18) Hammonton.
- 113—George Payne, (Dealer's, Sept. 23) Dover.
- 114—Thomas Jones, (Dealer's, Sept. 23) Short Hills.
- 115—S. S. Kresge Company, (Dealer's, Sept. 25).
- 116—W. S. Perry, (General, Sept. 25) Delaware.
- 117—Jacob E. Apgar, (Peach, Sept. 25) Fairmount.
- 118—Jacob M. Petty, (General, Sept. 25) Washington.
- 119—Hartung Brothers, (General, Sept. 25) Jersey City.
- 120—Willard Apgar, (Peach, Sept. 26) Fairmount.
- 121—James Apgar, (Peach, Sept. 26) Fairmount.
- 122—Samuel Wilson, (Peach, Sept. 26) Lebanon.

Number

- 123—Emile Kayser, (General, Sept. 26) Caldwell.
- 124—A. Schlevogt, (General, Sept. 28) Hightstown.
- 125—C. H. Hill, (General, Sept. 30) Palmyra.
- 126—Ferdinand F. Baumer, (Dealer's, Oct. 8) Newark.
- 127—Elliott Nursery Co., (General, Oct. 11) Princeton Junction.
- 128—Dirk deHaas, (General, Oct. 11) Plainfield.
- 129—Frank Lenz, (General, Oct. 11) Irvington.
- 130—Dono Brothers, (General, Oct. 11) Irvington.
- 131—S. Scilio, (General, Oct. 14) Hackensack.
- 132—North Jersey Nurseries, (General, Oct. 14) Millburn.
- 133—Henry Schnitzspahn, (General, Oct. 15) Bound Brook.
- 134—S. T. Hillman, (Dealer's, Oct. 16) Cape May.
- 135—Cicero H. Higgins, (General, Oct. 22) Ringoes.
- 136—W. M. Howey, (Dealer's, Oct. 22) Sewell.
- 137—Bound Brook Nursery Co., (General, Oct. 22) Bound Brook.
- 138—W. H. Forristel, (General, Oct. 28) Plainfield.
- 139—William Bryan, (General, Oct. 28) Elberon.
- 140—T. E. Steele, (General, Oct. 30) Palmyra.
- 141—Frank Marienscheck, (Dealer's, Oct. 30) Dunellen.
- 142—Garfield Williamson, (General, Nov. 7) Ridgefield.
- 143—George H. Vogler, (General, Nov. 14) Hohokus.
- 144—H. Fromm & Son, (General, Nov. 14) Haddonfield.
- 145—J. T. Garrison & Sons, (Strawberry, Nov. 16) Bridgeton.
- 146—M. D. Lupton, (Strawberry, Nov. 16) Newport.
- 147—R. D. Cole, (General, Nov. 16) Bridgeton.
- 148—W. S. Pullen, (Peach, Nov. 16) Englishtown.
- 149—Wm. Herbstreith, (General, Nov. 27) Nutley.
- 150—Gulliksen Brothers, (General, Dec. 5) Hackensack.
- 151—Meadow Brook, E. M. Garman, (General, Dec. 6) Englewood.
- 152—Samuel E. Blair, (General, Dec. 6) Nutley.
- 153—Wm. DeBree, Plainfield Nurseries, (General, Dec. 6) Scotch Plains.
- 154—W. H. Morgan, (General, Dec. 13) Westmont.
- 155—Leonard J. Smith, (General, Dec. 17) Merchantville.
- 156—Wm. F. Miller, (General, Dec. 17) Collingswood.
- 157—James Smith, (Dealer's, Jan. 18, 1919) Plainfield.
- 158—W. H. French, (Dealer's, Jan. 22, 1919) Hammonton.
- 159—M. Latzko, (General, Jan. 30, 1919) Plainfield.
- 160—Arthur Taylor, (General, Feb. 11, 1919) Boonton.
- 161—Mrs. Margaret Moore, (General, Feb. 11, 1919) Little Silver.
- 162—J. H. O'Hagan, (Dealer's, Feb. 14, 1919) Little Silver.
- 163—Carlman Ribsam Est., (General, Feb. 18, 1919) Trenton.
- 164—Martin C. Ribsam, (Dealer's, Feb. 19, 1919) Trenton.
- 165—Howard F. DeCou, (General, Feb. 20, 1919) Moorestown.
- 166—James L. Hall, (Dealer's, Feb. 24, 1919) Farmingdale.
- 167—Flowerland Horticulture Co., (Dealer's, March 4, 1919) Guttenberg.
- 168—Charles Bird, (General, March 11, 1919) Arlington.
- 169—Edward Johnson, (General, March 11, 1919) Trenton.
- 170—Walter M. Sage, (General, March 11, 1919) North Haledon.
- 171—G. Walter Swain, (General, March 11, 1919) Sea Girt.
- 172—Paul Steir, (Dealer's, March 31, 1919) Bayonne.
- 173—The Oakwood Landscape Co., (Dealer's, May 8, 1919) Elizabeth.

Special Certificates

Forty-four special certificates were issued during the past year after the stock covered had been examined and found satisfactory. These were issued mainly to persons not in a regular nursery business and enabled them to ship their stock into other states.

Special Inspections

Twenty-six special inspections were made at the request of persons requiring advice upon insect and plant disease control.

WHITE PINE BLISTER RUST WORK

Following their usual custom, the United States Department of Agriculture sent a scout, Mr. G. W. Bassett, into the state to co-operate with us in our campaign for the eradication of the disease in 1918. The following table is a summary of his work for the summer of 1918:

TABLE 4

WHITE PINE BLISTER RUST INSPECTIONS

COUNTY	Places Visited	Current Plantings Inspected	Pine Plantings Inspected	Number of Pines Inspected
Atlantic	1	.....	1	4
Bergen	2	.....	2	2,075
Burlington	7	4	5	12,329
Camden	21	7	20	1,429
Cumberland	12	2	11	59
Essex	3	.....	3	1,650
Gloucester	4	1	3	983
Middlesex	2	2	2	1,331
Monmouth	278	169	187	29,839
Morris	37	20	29	6,642
	367	205	263	56,341

This table does not include the inspections of pines made in nurseries by our own men. In the course of this and the above work, three infected pines were found near Morristown and several at Clementon. In addition, infected currants were discovered at four places near Red Bank. The diseased pines were destroyed and the infection on the currants gotten rid of by removing and destroying the leaves where the plants were few in number and by spraying with winter-strength lime-sulphur solution, where the area to be treated was too large to make hand picking practicable. At all places where infections were found the Department received friendly co-operation and help from the owners.

In 1916 scouting revealed a total of 67 infected pines. In 1917 this number was reduced to 15; in 1918, a total of 5 diseased pines were found and infected currants at four places. During April the United States Department of Agriculture placed Mr. H. W. Lutz in the field, and up to the present, after an examination of the pines in nurseries, those under quarantine, and plantings near Red Bank, no infections have been found.

In spite of the fact that no infections have been found in nurseries since 1917, it appears to be inadvisable to lift the quarantines placed by the bureau in 1916.

SINUATE PEAR BORER SCOUTING

The sinuate pear borer was first discovered in New Jersey in 1894 and after doing local damage at that time seemed gradually to disappear. During the summer of 1918, however, a serious infestation was found in a nursery within the state. Prompt action was taken. All infested trees and others in their immediate vicinity were destroyed. In view of this finding, pear tree plantings were inspected during October and November in the following places: Burlington, Moorestown, Plainfield, Rutherford, Springfield, Millburn, Bound Brook, Hightstown, Irvington, Eatontown, Hammonton, Glassboro, Sewell and Berlin. Slight traces of the pest were found at Irvington and Eatontown and the infested trees were destroyed. The other sections were apparently free.

EUROPEAN CORN BORER SCOUTING

On account of the discovery of the European corn borer in New York, Connecticut and Massachusetts, scouting for this pest in New Jersey was done in connection with other work as follows. Fifteen inspections were made in Passaic County. In Burlington County the scouting covered corn fields in the vicinities of Burlington, Mount Holly, Moorestown, Riverton, Riverside, Edgewater Park, Masonville and Birmingham. Also, several inspections were made in Cumberland County. Fortunately, the results were negative. Additional scouting work is being planned for the summer of 1919.

GIPSY MOTH INSPECTION

The finding of three egg masses of the gipsy moth on stock shipped to Glen Ridge by the American Forestry Company, Framingham, Mass., made it necessary to inspect all stock which had been shipped into New Jersey by this firm for the past year. This was done and in the 25 inspections made, one other egg mass was found at Oradell. In every case, the territory surrounding the infested trees was scouted so as to make sure that outbreaks had not taken place.

THE ORIENTAL PEACH MOTH SURVEY WORK

The oriental peach moth, which is recognized as a serious enemy of peach and apple production, is now known to occur in Connecticut, New York, Pennsylvania, New Jersey, Maryland and Virginia. It is thought to have been imported from Japan, probably with nursery stock of some kind.

Surveys during 1918 in New Jersey, carried out jointly by the Bureau of Entomology of the United States Department of Agriculture, and the New Jersey State Department of Agriculture, have shown areas of infestation at Middletown, Rutherford, Springfield and New Brunswick. The surveys at the present time are only partially complete.

This insect now covers so large a territory in the United States that the stamping out is not thought to be practicable, and further

effort should, therefore, logically be devoted to finding out as rapidly as possible measures by means of which the injury which it normally does to peach and apple can be prevented. The regular sprayings given to the apple orchard seem to effect its control, but the same is not true of peach. The New Jersey Agricultural Experiment Station is now making a study of methods of controlling the oriental peach moth on peach.

SUPPRESSION OF THE JAPANESE BEETLE

Popilia Japonica

As set forth in the annual report for the fiscal year ending June 30, 1918, arrangements for a determined effort to suppress this dangerous insect were completed and the work started. The moneys available consisted of \$5,000 set aside by the Secretary of the United States Department of Agriculture and \$1,000, devoted to that purpose by the Secretary of the New Jersey State Department of Agriculture. It was expected that on July 1, 1918, an additional \$10,000 from the United States Department of Agriculture and \$5,000 from the New Jersey State Department of Agriculture would become available. Unfortunately, Congress failed to pass the Agricultural Appropriation bill and the New Jersey appropriation, being made contingent on an appropriation by Congress, could not be used. The work suffered greatly by reason of this delay. Under the continuing resolution of Congress a small sum became available each month and the State House Commission, realizing the emergency nature of the project, granted \$5,000 for the prosecution of the work and allowed the \$5,000 specifically appropriated for that purpose to lapse.

With the limited funds the project was carried on until near the close of the summer when Congress passed the Agricultural Appropriation bill and moneys became available.

As the work came to a close in the season of 1918 it became evident that larger funds must be made available in 1919 because the infested area was found by that time to involve 5,000 acres. Accordingly, the Secretary of the United States Department of Agriculture agreed to ask Congress for \$25,000, and the Secretary of the New Jersey State Department of Agriculture to furnish \$10,000.

The dangerous nature of this insect, the problems that must be met in its suppression, the work of 1918, and the plans for 1919 are set forth in the following statement.

The Japanese Beetle Menace

A destructive insect known as the Japanese beetle was introduced into New Jersey possibly eight or ten years ago with plants imported from Japan. Since its introduction the insect has become well established and has spread with considerable rapidity. Unless energetic measures are taken immediately to eradicate it, it will without doubt continue to spread eventually over the entire United States. The infestation is at present confined to a comparatively restricted area in Burlington County, New Jersey. State and Federal authorities are co-operating in eradication and suppression work, but the active co-operation of the citizens in the infested territory must be had if the work is to be entirely successful.

Dangerous Character of the Insect. According to information obtained from various sources, this is one of the worst insect pests occurring in Japan, and observations made on the infestation in New Jersey bear out this estimate of its dangerous character. The beetles attack a very large list of plants, including various crops, ornamental plants, weeds, shrubs, etc.

List of More Important Food Plants. The beetles attack the foliage of apple, plum, peach, cherry, grape, raspberry, blackberry, various cucurbits, such as cantaloupes, watermelons, etc., asparagus, rhubarb, sweet potato, lima beans, and bore into the ears of corn. Among ornamental and shade trees, the following are attacked: roses, Althea, Virginia creepers, Japanese flowering cherry, spirea, bladder-nut, wild cherry, wild grape, hawthorn, hollyhocks, ferns, marigold, azalea, iris, elms, willows, birch, tamarisk, locust, hemp-tree, button-bush, etc.

Among weeds and other plants, it attacks smart-weed, Indian mallow, jewel-weed, elderberry, sassafras, milk-weed, rag-weed, morning glory, iron-weed, wild carrot, dock, poison ivy and lambs' quarters.

The larvæ or grubs in the soil feed on decaying vegetable matter and also on the roots of various live plants.

Life History Facts Bearing on Control Measures. The insect is most conspicuous and injurious in the adult or beetle stage by reason

of its injury to foliage. Having passed the winter as a grub in cells 6 to 12 inches below the surface of the soil it returns to near the surface of the soil as soon as it begins to warm up early in April, feeding on living or decaying vegetation in the soil, maturing and changing to a pupa during the period from the last of May to early in July. The adults begin to issue the latter part of June, emergence continuing until August. Egg laying begins shortly after emergence of the beetles and continues until the middle of September, by which time most of the adults have disappeared. The eggs are placed in the soil and the resulting larvæ feed on live roots and decaying vegetation during late summer and fall until checked by cold weather, when they prepare cells 6 to 12 inches below the surface and there remain dormant during the winter months.

Nature of the Problem of Suppression. It is evident that work can be effectively carried out against the adult or beetle stage above ground and also against the immature stages in the soil. While the eradication of an insect pest having the life history of the Japanese beetle is difficult, these difficulties are not insurmountable if the work is prosecuted vigorously and with full co-operation of all interested agencies. The campaign of work as outlined below is based on knowledge of the life history of the pest and it is attacked at its most vulnerable stages. As further information concerning its life history and habits is obtained, other lines of attack will undoubtedly develop, increasing the effectiveness of the work. Although this insect, by reason of its living in the soil, offers unusual difficulties in its eradication, it is clearly the duty of the state and federal authorities and interested property holders in the infested region to give their best efforts in its destruction.

Work Accomplished in 1918. Work on this project was first begun in the summer of 1917, with the assignment of an agent to the infested territory to make preliminary investigations concerning distribution, injuries and the life history of the insect.

This information with other data obtained from literature and other sources was made the basis of the program of operations during 1918. Although the work that year could not be carried out as planned because of lack of funds and disturbed labor conditions, the program was one of eradication, and work was prosecuted along the following lines:

(a) The establishment of a band approximately $\frac{1}{2}$ mile wide around the entire infested territory in which all foliage was kept thoroughly poisoned during the period of flight of the beetles.

(b) Maintenance of a coating of poison on food plants which occur along the roadsides running through the infested district in order to keep the beetles sufficiently far from the roads to prevent, if possible, their distribution on vehicles and passengers passing through the area infested.

(c) Maintenance of concentric bands of poisoned foliage within the outer band, each band reducing the area of worst infestation.

(d) Hand-picking of the beetles on a large scale on heavily infested areas purposely left untreated as traps.

(e) Treatment with sodium cyanide in water of as much area as possible of all soil heavily infested with the grubs.

(f) Preliminary work in testing the value of destruction of grubs in the fall in heavily infested soil by plowing.

Program of Work, 1919.

Prevention of Spread. The experience obtained in 1918 indicates that the following operations are necessary.

(a) The establishment and maintenance of a circular band $\frac{1}{2}$ mile wide entirely around the infested district. In this band all non-economic food plants of the insect should be killed and all economic food plants attacked by the beetle should be kept constantly covered with poison throughout the period of its flight.

(b) Destruction of all non-economic plants along the roadsides throughout the infested district. Maintenance of a poisonous coating on all economic food plants along the roadsides throughout the infested district.

(c) The removal of food products from the farms within the infested district only during the warm parts of the day in order that the beetles may not attach themselves to the packages, or their contents, and thus be carried entirely outside of the district. Reduction to the minimum of visits during the evening or early morning of persons whose business will take them out among the infested plants in order that the beetles may not be carried away on their clothing.

(d) All green sweet corn grown within the infested district to be removed only under quarantine regulations. These quarantine regulations provide that each package shall have attached to it a certificate stating that the contents of same has been examined and

found to be free from the Japanese beetle. Arrangements will be made by means of which the grower can have his corn examined and certified promptly. (Federal Horticultural Board, Quarantine No. 35.)

Destruction of the Insect Within the Infested Area.

(a) The establishment and maintenance of a coating of poison on all economic food plants of the beetles within the infested district and on all non-economic food plants which cannot otherwise be destroyed or satisfactorily treated, except certain areas to be selected to serve as traps for the insects and on which the insects are to be collected by hand.

(b) Hand-collection of as large a portion of the adult beetles that gather on these trap areas as is practicable.

(c) Thorough treatment with sodium cyanide in water of all areas within the heavily infested district which are known to be infested with the grubs in order that the supply of the immature forms may be reduced to the lowest possible extent. This treatment to be given in the spring and again in the fall of 1919.

(d) The practice of absolute clean culture in the cultivated lands to the end that the beetles may not be attracted to them to lay their eggs.

(e) The elimination of all headlands, fence rows and similar waste places to the greatest possible extent, thus reducing the area on which food plants attractive to the beetles may grow and in which they may lay their eggs.

Part Which the Different Organizations Can Play in Carrying Out This Program.

(a) State and Government agencies concerned in carrying out this program propose to undertake the following operations:

(1) Establish the above described circular band.

(2) Destruction or treatment of all food plants growing along the roadsides throughout the district.

(3) Treatment with poison within the infested district of non-economic food plants and such economic food plants as may be necessary.

(4) Hand-picking of the beetles from selected areas.

(5) Inspection and certification of green sweet corn grown within the infested area.

(b) The local organization and individuals should undertake and carry out the following measures:

- (1) The practice of absolute clean culture within all cultivated areas in order that no weeds or other food plants other than the crops themselves may grow thereon.
- (2) The plowing and bringing under cultivation in as complete a manner as at all possible all headlands, fence rows, etc., on which weeds and other plants of the beetles normally grow, and in which eggs will be laid.
- (3) Maintenance from approximately July 1 to cool weather, the period of flight of the beetles, of a coating of poison on all economic food plants within the farm limits except that in the case of bearing fruit plants treatments should be ceased one month before the fruit is to be picked, and should be resumed immediately thereafter. In general, it is hoped that property holders will keep thoroughly poisoned throughout the period of flight of the insects all food plants of the beetles growing within the limits of his property.
- (4) The removal of food products from within the area only during the warm parts of the day when the beetles are not likely to cling to the crops, packages, equipment, and men, and thus be carried out.
- (5) The reduction to the greatest possible degree the extent to which persons move about in grass and weeds during the cool parts of the day, in order that the danger of the beetles clinging to clothing, vehicles, and animals may be reduced to the greatest possible extent.

Organization. The project of the Japanese beetle eradication and suppression has been materially strengthened by additional equipment, supplies, and men, and it is confidently expected that the work of the season 1919 will show a decided improvement in the situation.

The advisory committee consists of Dr. T. J. Headlee, State Department of Agriculture, and Dr. A. L. Quaintance, United States Bureau of Entomology. John J. Davis is joint agent in charge of the project and C. H. Hadley represents the Federal Horticultural Board in the inspection and certification of green sweet corn and questions of distribution and spread.

A laboratory and office has been established at Riverton, N. J., and interested persons are cordially invited to call or telephone when in need of assistance.

It is realized by those who are charged with the duty of carrying out this work that practically never in the history of insect suppression has an insect with the foothold that the Japanese Beetle now possesses been eradicated, and in all presentations of the case an effort has been made to make this clear. It is also recognized that there are instances in which suppression work has led, from a country-wide standpoint, to very satisfactory limitation of spread, to the establishment of the natural enemies of the pest, and to the development of very efficient means for its control, saving the country from enormous losses.

Those placed in charge of this work do not for a moment doubt that the latter result can be obtained and some of them hope that eradication itself may eventually be realized.

At any rate, failure to make the best possible effort in this direction would amount to a failure to serve the best interests of the people, not only on the part of those in immediate charge but also on the part of those who stand behind and furnish the funds necessary to the effort.

DANGEROUS FOREIGN PLANT DISEASES

Within the past two or three years, there has been introduced into Virginia, West Virginia and Georgia the European nematode disease of wheat, and within the past year, two Australian diseases of wheat have been found in Illinois and Indiana, one being the "take-all" and the other the "flag smut," both being very destructive.

The flag smut affects the leaf blades, leaf sheaths, stems, and sometime the spikes of wheat. Usually every shoot is affected, the leaves wither, and the spike is frequently replaced by a mass of twisted leaves. The spores are carried on the seed and live over in the soil. In portions of Australia the losses from this disease run from one-tenth to one-half of the crop.

The take-all disease, known also as whitehead or footrot, attacks the roots and the base of the plants, rotting the roots and blackening the base of the stem. Young wheat plants speedily wither and die; older ones may survive but rarely produce grain. Heavy losses have been sustained in all countries where this disease occurs.

The nematode, or eelworm, disease is caused by a tiny worm which attacks the young seedlings, causing a decided rolling, wrinkling, twisting or other distortion of the leaves. The plants may die, or if they mature, they always produce dwarfed diseased heads bearing hard black galls filled with eelworm larvæ. When the galls are sown with the wheat the nematodes escape and infect the seedlings. Losses of from 50 to 80 per cent have been caused in some fields by this organism.

It is very probable that the Federal Government will exercise the right of quarantine on the localities infested.

The United States Department of Agriculture has established a quarantine on a number of states, prohibiting the movement of the common barberry, which is well known as the carrier of the black stem rust of wheat, oats, rye, and many cultivated field grasses.

The Potato Wart Disease

Potato growers in New Jersey should be on the watch for this new disease which has been discovered in several counties in Western Pennsylvania. The wart is believed to have come into the United States on potatoes imported from Europe. The disease has been gradually spreading over Europe and in recent years has done much damage in England and Ireland.

The disease is characterized by warty outgrowths on the underground portions of the plant. Young warts are usually light brown in color and after decay begins they turn black. Badly warted tubers are unsalable and for the most part unfit for food. Advancing from small warty growths near the "eyes," the entire tuber soon becomes a warty mass, which rapidly decays, releasing in the soil the thick walled spores whose longevity exceeds six or seven years in the absence of potato plants.

Quarantine, restrictive, and eradication work are under way in Pennsylvania against this disease.

PUBLICATIONS

During the past fiscal year, the following publications, relating to inspection work, have been issued:

Circular 24, Unusual Nursery Insects.

Circular 25, The More Important Insect Enemies of the Rose-Mallow in New Jersey.

Circular 26, Nursery Insects.

Circular 28, Requirements and Rules for the Inspection and Certification of New Jersey Second-Crop Seed Potatoes, as adopted by the New Jersey State Potato Association and the New Jersey State Department of Agriculture.

Bee Inspection

THOMAS J. HEADLEE, PH.D., *State Entomologist*

ELMER G. CARR, *Deputy to the State Entomologist in Bee Inspection*

INTRODUCTION

The control of bee diseases under New Jersey conditions naturally falls into three divisions—routine inspection both on a general plan of covering the state within a period of five years and on request from beekeepers, suppression by means of law enforcement in honey-producing and in queen-producing yards, and making better beekeepers through educational processes.

INSPECTION

Regular Inspections

After the survey of Hunterdon County beekeeping, mentioned in last year's report, it was planned thoroughly to examine all bees in this county during 1918. In carrying out this plan the season of 1918 was given over mainly to work in Hunterdon County. The infected areas were definitely located and good progress made, in

eradicating American foulbrood from this county. This is the form of bee disease most prevalent in this area.

Inspections were made also in other counties on request and as the disease situation seemed to demand.

Figures for the entire county are not available at this date but the results of the inspection in three apiaries will serve to show some of the effects of this work. The apiary of Mrs. Anna Helman at Pattenburg, containing 15 colonies, was found to have 6 infected colonies. The recommended treatment was given the bees and two later inspections failed to show any reappearance of American foulbrood.

At Ross Pickel's apiary at Sunnyside, of 16 colonies, 4 were infected. After treatment the infection was reduced to one colony. At G. Fred Jordy's apiary at Flemington, of 40 colonies, 6 were infected, and after treatment the infection was reduced to 2 colonies.

The American foulbrood infected area in the vicinity of Moorestown, Burlington County, which is mentioned in last year's report, has been reduced. All the beekeepers in that neighborhood are heartily co-operating and in all probability the disease will shortly be eliminated in that district.

The queen-rearing apiary of Robert B. Spicer, at Wharton, and that of J. Field Garretson, at Bound Brook, were examined, found free of disease and certificated as follows: (1) Robert B. Spicer, on July 22, 1918, and May 13, 1919; (2) J. Field Garretson, on May 14, 1919.

The work of the period embraced by this report resulted in the examination of 242 apiaries containing 2,739 colonies of bees. Of these 183 were in some form of box or keg and 2,556 in some form of movable frame hive.

SURVEY OF BEEKEEPING

Following the inspection season of 1918 a survey of beekeeping conditions in Morris and Somerset counties was made. This served to furnish many needed corrections in the mailing list as well as data of value in further work in these counties. Beekeepers not before listed were sent the state beekeeping publications and the names of persons no longer keeping bees were removed from the file.

The following table will give a good idea of the status of beekeeping in these two counties:

Somerset County

Colonies, fall of 1917	1,013
Colonies lost in winter	516
Colonies, spring of 1918	497
Swarms captured, 1918	326
Net loss	823
Comb honey, 1917, 3,880 sections; Value at 20½ cents....	\$801.87
Extracted honey, 1917, 2,879 lbs.; Value at 19 cents.....	547.01
	<u>\$1,348.88</u>
Comb honey, 1918, 5,394 sections; Value at 27½ cents....	\$1,483.35
Extracted honey, 1918, 5,515 lbs.; Value at 29 cents.....	1,599.35
	<u>3,082.70</u>
Gain over 1917	\$1,733.82

Morris County

Colonies, fall of 1917	1,296
Winter loss	648
Colonies, spring of 1918	648
Swarms secured, 1918	316
Net loss	964
Comb honey, 1917, 13,042 sections; Value at 23½ cents....	\$3,043.13
Extracted honey, 1917, 3,320 lbs.; Value at 24 cents.....	796.80
	<u>\$3,839.93</u>
Comb honey, 1918, 10,947 sections; Value at 28 cents....	\$3,065.16
Extracted honey, 1918, 5,145 lbs.; Value at 30 cents.....	1,543.50
	<u>4,608.66</u>
Gain over 1917	\$768.73

It is plain from these tables that 50 per cent of the bees of these two counties were lost in the winter of 1917-18. There was a further reduction in the crop due to the weakened condition of colonies which survived the winter.

Swarming is much too high for good results. It is obvious that the two most pressing needs are better wintering and swarm control, both of which are practicable for the beekeeper.

BEE DISEASE SUPPRESSION

New Bee Disease

In June, 1919, the attention of the state entomologist and his deputy in bee inspection was again called to a disorder of adult bees which is causing great loss to the beekeepers, principally of Monmouth County. So prevalent is this disorder that a conservative estimate of the loss from its inroads this year (1919) is placed at \$10,000. So far as is known, this disorder has not appeared to any troublesome extent, with two exceptions, outside of Monmouth County, and these occurrences are in close proximity to this county. One was at a point in Middlesex County midway between Englishtown and Old Bridge and the other in Mercer County near Hamilton Square.

Exhaustive studies are being made to determine the cause of this disorder and the remedy for it.

Queen-Rearing Apiary

As set forth in last year's report an apiary has been established at New Lisbon as a basis for the rearing of high-grade queen bees. This step was taken as a result of a request from the New Jersey Beekeepers' Association and was prompted by an insufficient available supply of queen bees of dependable stock. The suppression of bee disease, particularly European foulbrood, as well as the increase of honey crops to a worth-while point, is almost largely dependent upon good stock.

One of the demonstration apiaries was last year moved to New Lisbon, but as the number of colonies was insufficient for the proposed work, all bees from the demonstration yards were moved to this point, making about 50 colonies in all.

The grounds have been graded and about a ton of honey has been collected by the bees and is now on the hives.

War conditions made it impossible to secure an operator and funds to start queen rearing at this apiary this year. It is confidently expected that both will be available for the work next year.

EDUCATION

Emergency Feeding

In the spring of 1919 adverse weather conditions prevailed to such an extent that most colonies of bees in New Jersey by May first were short of stores and were threatened with extinction by starvation. A warning notice was issued on May first to all beekeepers, advising them to feed the bees to keep them alive and help them build up to storing strength for the honey harvest.

This was the means of saving many colonies from actual starvation and has resulted in a much increased yield of honey through stronger colonies to gather it.

Demonstration Apiaries

Demonstrations were given in the apiaries at Egg Harbor, Daretown and Plainsboro, the honey crop removed and extracted, and the bees prepared for winter.

At Egg Harbor it was demonstrated that in spite of the presence of European foulbrood to the extent that nearly all the bees in that neighborhood succumbed, through the use of good stock and by proper management profitable honey production is possible. This has served to re-establish confidence in beekeeping in this vicinity.

At Daretown the apiary served to revive interest in that very good beekeeping locality, and better stock and modern methods and equipment are being adopted.

Schools for Beekeepers

Experience seems to indicate that one of the best ways to control bee diseases is by making better beekeepers. Carrying out this idea, in co-operation with the Division of Extension of the State University of New Jersey, the office of farm demonstration in the counties served, and the principals of high schools, two-day schools for beekeepers were held at Flemington, Somerville, Morristown, Newton and Belvidere.

The following table sets forth the data concerning these schools:

Date	PLACE	Registrants	ATTENDANCE						Total
			First Day			Second Day			
			A. M.	P. M.	Night	A. M.	P. M.		
March 4, 5	Flemington	21	23	22	15	21	22	103	
March 6, 7	Somerville	28	21	26	16	21	22	106	
March 12, 13	Morristown	32	39	76	12	22	21	170	
March 18, 19	Newton	12	11	11	8	11	11	52	
March 25, 26	Belvidere	**	9	9	*	9	9	36	
	Totals	93	103	144	51	84	85	467	

*No evening lecture.

**Registration not required.

The number in attendance and the interest shown at these schools indicate this to be a most promising means of teaching profitable beekeeping methods, and should be carried on as intensively as conditions will permit.

The good effects of these schools has been seen in the apiaries of those who attended in the adoption of modern apparatus, better methods and improved stock.

Inter-State Fair

An exhibit of honey and beekeepers' appliances was staged at the Inter-State Fair at Trenton, September 30 to October 4, 1918. A considerable number of beekeepers were met and helped with their beekeeping problems.

Lectures and Meetings

Lectures on different phases of beekeeping were delivered at community meetings through the arrangement of the offices of farm demonstration in the respective counties, at Titusville, Wildwood, New Monmouth and Oak Ridge, and to the high school pupils at Flemington.

Field meetings of the New Jersey Beekeepers' Association were held at Branchville on August 10, at Plainfield on September 24, 1918, and at Trenton Junction on June 7, 1919. The annual meeting of the association was held at Trenton on January 16 and 17, 1919. All these are a part of the propaganda for the advancement of the beekeeping industry in the state through teaching better beekeeping practices.

The New Jersey Beekeepers' Association continues to show a healthy growth. The membership has increased the past year from 210 to 324. The deputy bee inspector has served as secretary and treasurer of this association since 1912.

In December, 1918, the deputy bee inspector attended a meeting of the Eastern New York Beekeepers' Association at Albany and gave a resumé of the bee-disease control work in New Jersey. In February a school for commercial beekeepers held at Ithaca, New York, by Federal experts, also was attended.

Correspondence

Letters from beekeepers asking advice have immensely increased in number this year and indicate a lively interest in a more profitable bee-husbandry.