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DEPARTMENT OF AGRICULTURE

ALVA AGEE, Secretary

BULLETIN

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New Jersey
State Department of Agriculture

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CONTENTS

	PAGE
REPORT OF THE SECRETARY, <i>Alva Agee</i>	37
Bureau of Animal Industry.....	37
Work of the Bureau of Markets.....	37
Bureau of Statistics and Inspection.....	40
Seed Certification	40
Education	41
REPORT OF THE BUREAU OF ANIMAL INDUSTRY, <i>Dr. J. H. McNeil, Chief</i>	43
Hog Cholera	44
Stallion Registration	46
Cattle Scab	46
Black Leg	46
Glanders	47
REPORT OF THE BUREAU OF MARKETS, <i>Alexis L. Clark, Chief</i>	49
Standard Grades for Market Products.....	50
Organization	52
Transportation	53
Wholesale Selling	54
Retail Selling	55
Miscellaneous Activities	56
Looking Forward	57
Report of the Specialist in Dairy Products Marketing.....	58
City Distribution	59
Increasing Milk Consumption	60
Standard Grades of Milk	61
Cooperation with Producers' Marketing Associations.....	61
Milk and Cream Contest, Agricultural Week.....	62
REPORT OF ASSISTANT DIRECTOR OF FARMERS' INSTITUTES, <i>William H. Hamilton</i>	64
Speakers	64
State College of Agriculture	64
State Department of Conservation and Development.....	65
State Department of Public Instruction.....	65
State Department of Health	65
State Department of Agriculture	65
Practical Farmers	65
Miscellaneous	66
Meetings	66
Attendance	68
REPORT OF THE BUREAU OF STATISTICS AND INSPECTION, <i>Harry B. Weiss, Chief</i>	69
Statistical Service	70
Value of the Crop Reporting Service.....	71
Cooperation with United States Department of Agriculture.....	72
Peach and Apple Survey.....	72
Report of the Inspection Service.....	73
Plant Inspection, <i>Harry B. Weiss, Chief; Thomas J. Headlee,</i>	
<i>State Entomologist; Mel T. Cook, State Plant Pathologist</i>	73
Foreign Nursery Stock Inspected.....	73
Summary of Foreign Nursery Stock Inspected.....	73
Domestic Stock Inspected During Fall of 1919.....	74
Domestic Stock Inspected During Spring of 1920.....	74
Nursery Inspection	75
Special Certificates	75
Special Inspections	75

CONTENTS (*Continued*)

	PAGE
Potato Wart Inspection	76
Potato Inspection and Certification	76
White Pine Blister Rust Work	77
Terrapin Scale Scouting	77
European Corn Borer Inspections.....	78
Exhibits	78
The Green Japanese Beetle	78
Bee Inspection, <i>Elmer G. Carr, Deputy to the State Entomologist</i> <i>in Bee Inspection</i>	82
Introduction	82
Law Enforcement	82
Education and Organization.....	83
New Problems	84

Annual Report of the New Jersey State Department of Agriculture

REPORT OF THE SECRETARY

ALVA AGEE

The State Board of Agriculture presents its report for the fiscal year ending June 30, 1920. The work of the Department is carried on through the Bureaus of Animal Industry, Markets, Statistics and Inspection, and the administrative office of the Secretary of Agriculture.

THE BUREAU OF ANIMAL INDUSTRY

The concise report of Dr. J. H. McNeil, chief of the Bureau of Animal Industry, affords some indication of the efficiency into which this department of our work has come. Control work can be made constructive in nature, and our stockmen are fine in their willingness to cooperate as they come to see that there is a constructive purpose. Tubercular and other diseased animals are barred from entrance into New Jersey, and assistance is rendered to all herd owners who want to make their herds free from disease and to keep them so. The cash value of this service to owners of cattle, horses and swine is immense, and the effect upon the food supply favors every consumer. The number of men applying for assistance in the eradication of tuberculosis is far beyond the bureau's ability to serve, and the indemnity fund should be \$25,000 larger than it now is. When the money goes to make and to keep herds absolutely clear from tuberculosis we are making permanent headway in safeguarding human lives. The successful warfare on the infectious diseases of swine is adding a large sum to the agricultural wealth of our state, and is directly increasing the meat supply.

THE WORK OF THE BUREAU OF MARKETS

The distribution of food products is wasteful and costly. The consumer pays in many instances 100 to 200 per cent more than the pro-

ducer receives. Criticism of the distributor is idle because the fault lies in the system itself. The manufacturing world has standardized its products so that there is relatively little unnecessary waste of effort, time and money in reaching the consumer. In agriculture millions of producers act independently in grading and directing their crops to market. It results that great centers are congested with receipts of vast amounts of food products of unknown quality, and redistribution to smaller cities and towns entails heavy expense and a loss of time that impairs quality. The student of distribution understands that lack of assurance regarding quality is responsible for a big percentage of the ultimate price. It is this absence of certainty regarding quality that makes necessary a small army of people between producer and consumer and an immense amount of unnecessary transportation. Every instance of profiteering should be denounced, but our system of distribution makes a waste necessary that is many times greater than any excessive charge for service, and also makes the excessive charge possible.

I ask a careful reading of the report of A. L. Clark, chief of our Bureau of Markets, and call attention to the fact that all the activities of the bureau's efficient staff, while yielding immediate returns of which the State Board is proud, are only initial steps in a movement to bring producers and consumers closer together and to eliminate waste. Every instance of success that we have in the organization of cooperative groups for collective shipment and selling is a direct step toward standardization and an understanding of its benefits both to producer and consumer. The success we have secured in the adoption of grades by our state-wide special-interest associations is a step along the road that must be traveled if waste is stopped. The arrangements made by our bureau for better railway and express service for products from producing points, which have been cordially entered into by railway managers, is only a step in bringing producer and consumer closer together. Waste is reduced, production is encouraged, grading is offered more inducement, and the consumer is better supplied. The cooperation of city chambers of commerce and women's club's, that make practicable our arrangements to send tens of thousands of bushels of fruits and vegetables to barren markets where the produce is distributed to people awaiting the arrival of the trucks, again offers inducement to the producers to be careful in grading, so that representations of the bureau

and the clubs may be met. The formation and encouragement of city markets have demanded considerable time, but through such means some producers and consumers are brought into personal contact, and these markets are one small item in the general program of the bureau.

The grading and branding of farm products, that is absolutely essential to confidence on the part of the buyer and the wiping out of an immense waste in our present system of distribution, cannot be brought about in any extensive way without collective bargaining. It is only when the producers of any one commodity in a locality join in the establishment of a brand for collective shipment and selling that many producers can be caused to send a standardized product to market. It is only groups engaged in collective bargaining that can afford to learn the state of the market each day in the smaller cities and towns of the state and to supply them direct. The Bureau of Markets receives reports each morning during the marketing season regarding sales in centers of population, and these are distributed to the leading shipping points, but it can efficiently serve the state's agriculture, and the people of our cities and towns who must be supplied with food, only when there is group action on the part of producers in the establishment of grades and brands that go with collective bargaining. New Jersey has many highly successful producers whose operations are so extensive, or whose access to city markets is so immediate, that they can establish quality and serve well their own interests and those of consumers, but the great mass of our products go to consumers by a woefully costly, indirect route. This is necessary only because the consumer does not know the quality until he sees the article, and the shipper is not in a position to reach the consumer with any directness.

Our Department has sought some laws that are permissive in character and not compulsory. This huge problem cannot be solved by compulsory legislation. Our producers are intelligent men and great numbers of them are ready to join with their special-interest associations and the State Department of Agriculture in bettering conditions. The work is slow, as any thoughtful man should realize. In the establishment of standard packages and grades it is necessary to learn what is deemed the most practicable by a majority of producers. Our Bureau of Markets then establishes these grades and packages as standard, and it needs more legislation to enable it to protect such brands. This

opens the door to a better market for all who are willing to meet the conditions, and headway is made toward that degree of standardization necessary to make distribution in agriculture comparable with that in manufacturing. The service now being rendered would justify the state in making much larger appropriations for our Bureau of Markets. The immediate results are repaying the investment many times over, but their greater value lies in the fact that they are steps in the only program known to true students of market conditions to wipe out an enormous waste of time and money that is a burden upon consumer and producer alike.

BUREAU OF STATISTICS AND INSPECTION

Mr. H. B. Weiss, formerly chief inspector in the Bureau of Inspection, succeeded Mr. Franklin Dye as chief of the bureau, and his report of its activities, including those of the state entomologist, Dr. T. J. Headlee, and the state plant pathologist, Dr. M. T. Cook, affords some evidence of the check to importation of harmful insects and diseases that the small staff of inspectors has been able to afford. The bureau has saved our state from great loss in many cases. The state should enlarge this branch of protective work to permit constant survey of the state, as some plant enemies are bound to find their way in. Such enlarged activity would call for the addition of six or more trained men.

The cooperation of the Federal Government in our crop reporting work has aided us in gaining accuracy, and our thanks are due the 600 men in all parts of New Jersey who contribute free service in making our statistics dependable.

SEED CERTIFICATION

The production of late-grown seed potatoes is becoming a great industry in New Jersey, and the Department's cooperation with the State Potato Association in the inspection and certification of fields grown for seed is a means to that end.

EDUCATION

Necessarily the Department is engaged in much educational work. The farmer's institutes, under Assistant Director Hamilton, are made efficient through the cooperation of county farm demonstrators, local communities, and the sacrificing work of many specialists among the staff members of other state institutions and among the state's farmers.

It is the purpose of the State Board to render every possible assistance to special-interest, or commodity, organizations that are state wide in character. Its relations with these organizations are direct. One means to the end sought is "Agricultural Week" each January, when members of nearly all these organizations are invited to hold their annual meetings as guests of the State Board. It is the purpose of the Board to keep the exhibit at the Armory distinctive in character as a producers' exposition, and both the meetings and the Armory exhibit gain each year in educational value and interest.

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

Bulletins

- No. 21. The Collection, Handling and Sale of City Stable Manure.
- 22. Fourth Annual Report of the New Jersey State Department of Agriculture.
- 23. Official Proceedings of the Fifth Annual Agricultural Convention, together with Some Addresses and the Report of the Marketing Conference held by the Bureau of Markets of the State Department of Agriculture.
- 24. The State Potato Association, the State Dairymen's Association, and the State Alfalfa Association, Agricultural Week, 1920.

CIRCULARS

- No. 29. Crop Statistics; Weather and Crops; Relation of Rainfall, Temperature, etc., to Crops; Climate and Insects; Climate and Plant Diseases.
- 30. The Green Japanese Beetle.
- 31. Miscellaneous Nursery Insects.
- 32. Packing Eggs for Market Shipment.
- 33. Crop Statistics, County Boards of Agriculture and Granges.

Franklin Dye, former Secretary of the State Board of Agriculture and later Chief of the Bureau of Statistics and Inspection, was taken from us by death April 18, 1920, and I cannot give better expression

to the feeling of his coworkers within the Department, and the people of the state to whom he was so well known, than in the words of the State Board of Agriculture as embodied in the following resolutions adopted by it:

WHEREAS, Our honored colleague and friend, Franklin Dye, former secretary of the State Board of Agriculture, has been taken from us by death,

Resolved, That the members of the State Board of Agriculture record their deep appreciation of the great service that has been rendered New Jersey agriculture through his official work covering thirty-three years.

Resolved, That, while his work in agricultural education and organization have inestimable value that places him in the front with our splendid pioneers in organized effort to improve agriculture, we hold even higher the influence he exerted throughout the state as a manly man and Christian gentleman, and recognize keenly the loss that has come to us in the natural course of events.

Resolved, That we place this tribute to our esteemed friend upon the minutes of the State Board of Agriculture and offer a copy to the family of our former colleague with expression of our deepest sympathy with them in their bereavement.

REPORT OF THE BUREAU OF ANIMAL INDUSTRY

DR. J. H. McNEIL, *Chief*

The work of the Bureau of Animal Industry has followed the general line of previous years, although since the adoption of Federal Regulation No. 7 by the United States Bureau of Animal Industry, restricting the movement of cattle interstate, a readjustment of the bureau force and work has become necessary, and our activities directed and extended into other fields. Continuous and consistent work in the supervision of tuberculin testing and the censuring of tuberculin test charts and frequent retests of interstate shipments, has prevented the entrance of many diseased cattle, and has resulted in placing the business of importing on a better and safer basis, insuring the dairyman against loss when he is forced to purchase his cows from outside and unknown sources.

The adoption of the accredited herd plan, primarily organized and supported by the breeders of pure-bred cattle and working in cooperation with the State and Federal Bureaus of Animal Industry, has done more, we believe, in a constructive way than all of the work of tuberculosis control and eradication previously attempted. The volume of tuberculin testing and slaughtering of reactors has taken a large part of our appraisement fund. The animals now being held in quarantine pending slaughter will, when presented for appraisement, leave the Bureau with but a small sum to start the work of another year. We have received and placed on file many requests for tuberculin tests to be conducted on the accredited herd plan, and it is to be regretted that definite action cannot be taken, and the breeders of pure-bred and grade cattle given the service they request; but this can be done only after additional funds have been secured.

In November, 1919, acting on the request made by representatives of the State Dairymen's Association and breeders of pure-bred cattle, in conjunction with the Animal Industry Committee of the State Board of Agriculture, there was discussed a plan looking toward a change in the existing laws, increasing the amount of indemnity paid for both pure-bred and grade cows which react to the tuberculin test, and returning the amount received for the salvage to the owner of the cattle.

It was agreed to present to the legislature for their action a bill which incorporated the following recommendations:

First: To place no limit on the valuation to be fixed by the appraisers.

Second: To limit the amount paid by the state for registered and unregistered animals; the owner to receive the salvage (which under the present law is turned into the state treasury), and also, from the state, one-third the difference between the appraised value and what is received for the salvage, this sum not to exceed \$100 for a registered animal and \$50 for an unregistered animal.

Third: That the owner shall not receive appraisalment for an animal which has not been in the state at least ninety days prior to the condemnation thereof.

The recommendations as submitted conform to modern thought and practice along these lines; and by such an arrangement, if the owner enters into the cooperative agreement to maintain his herd on the accredited basis, he may also receive from the Federal Bureau of Animal Industry a maximum appraisalment of \$50 for a registered animal and \$25 for an unregistered animal. He will receive this in addition to the salvage and the amount allowed on appraisalment by the State. These recommendations received the support of the legislature and became a law, taking effect April 5, 1920.

The tuberculin testing of entire herds of pure-bred or grade cattle under the accredited herd plan has proven so popular in the state that we will have used during the first part of the next fiscal year nearly all the appraisalment fund appropriated by this legislature. We have received and have now on file additional requests for tuberculin testing which cannot be given attention until a fund has been provided. The records will show that there are at the present time twenty-eight herds which are fully accredited and twenty-three herds which have been tested once without a reactor. This will mean that during the next fiscal year we will have at least fifty herds which are fully accredited, and if the popularity of the work continues a substantial increase of the \$25,000 now appropriated should be supplied.

HOG CHOLERA

The work of vaccinating hogs for protection against cholera has received increased consideration during the past year, and because of a lack of funds and a sufficient number of veterinarians to carry on the

work the county boards of agriculture, cooperating with the State Department of Agriculture and the swine breeders, secured at the last session of the legislature a fund considered ample for the time being to employ additional help to give immediate attention to all requests which might be made for vaccination, without organizing an extensive bureau for this purpose. Where the work has been systematically carried out excellent results have been attained, and it is our desire after the first of the next fiscal year to meet all requests for this service as promptly as possible. We submit below a brief summary of the work as carried out by the representatives of this bureau and veterinarians in private practice:

Number treated by Bureau veterinarians—	
Serum alone.....	1,265
Simultaneous	4,051
Number treated by private veterinarians—	
Serum alone.....	2,106
Simultaneous	12,832
Total number given single treatment.....	3,371
Total number given simultaneous treatment....	16,883
Grand total treated.....	20,254

The record by counties is as follows:

	Single	Double
Atlantic	44	543
Bergen	9	128
Burlington	230	1,030
Cape May	59	633
Camden	141	214
Cumberland	587	1,484
Essex	159	161
Gloucester	578	1,019
Hudson	137	6,087
Hunterdon	4	632
Morris	49	94
Monmouth	334	1,159
Middlesex	78	163
Mercer	175	394
Ocean	367	1,192
Passaic	88	224
Somerset	6	98
Sussex	—	—
Salem	158	1,443
Warren	120	48
Union	48	137
Total	3,371	16,883

STALLION REGISTRATION

The number of applicants for the registration of stallions and jacks has gradually decreased, probably for two reasons. First, on account of the trucks and gasoline-driven machinery; and, second, because of the high price of feed. However, it has been noted that at the principal markets in the state the number of inshipped horses and mules has been exceptionally high in districts where food is comparatively cheap, and where intensive farming is not carried on horses and mules could be raised at a profit. The following is a summary of the comparative registrations for the years 1918, 1919, and 1920.

	1918	1919	1920
Burlington	16	15	7
Camden	2	1	2
Cape May	1	—	—
Cumberland	5	5	3
Gloucester	—	1	—
Hunterdon	25	27	19
Mercer	3	5	3
Middlesex	9	2	2
Monmouth	2	6	7
Morris	11	8	6
Ocean	1	2	—
Passaic	2	—	—
Salem	16	10	7
Somerset	10	10	7
Sussex	4	5	3
Union	3	1	1
Warren	21	17	15
Tal	131	115	82

CATTLE SCAB

We received a report from a private veterinarian that cattle scab had been diagnosed in the north-western portion of the state, the animals affected having been imported from New York. Appropriate treatment was recommended, and the disease yielded to treatment.

BLACK LEG

Several isolated outbreaks of black leg have been reported by private veterinarians, but were not extensive and yielded to protective inoculation.

GLANDERS

Occasional cases of glanders were found in rural districts in horses which have been imported from larger cities on the border of New Jersey. The mallein testing of horses and mules engaged in traffic between New Jersey points and the State of New York has been carried out as authorized by this bureau. The results are as follows:

Negative	2,670
Positive	5
Total	2,675

The following is a summary of activities conducted under supervision of the Bureau of Animal Industry for the fiscal year 1919-20.

ACCREDITED HERD WORK:

Tested by United States Bureau of Animal Industry veterinarians	1,956	
Reactors	40, or 2	per cent
Tested by New Jersey Bureau of Animal Industry veterinarians	5,065	
Reactors	428, or 8½	per cent

NATIVE CATTLE:

Tested by private veterinarians	9,416	
Reactors	733, or 7¾	per cent
Tested by United States Bureau of Animal Industry veterinarians	58	
Reactors	16, or 27¾	per cent
Tested by New Jersey Bureau of Animal Industry veterinarians	897	
Reactors	147, or 16½	per cent
Tested for export	706	
Reactors	48, or 7	per cent
Total number of native cattle (including accredited herds) tested	18,098	
Total Reactors	1,392, or 8	per cent

IMPORT CATTLE:

Tested before entering by United States Bureau of Animal Industry veterinarians	4,199	
Reactors	49, or 1½	per cent
Tested before entering by private veterinarians	6,174	
Reactors	238, or 3¾	per cent
Tested after entering by United States Bureau of Animal Industry veterinarians	998	
Reactors	76, or 7¾	per cent

IMPORT CATTLE (*Continued*):

Tested after entering by private veterinarians	489
Reactors	58, or 11¾ per cent
Total number accredited, native and import cattle tested	19,585
Total Reactors	1,526, or 7.7 per cent
Slaughter cattle which entered on permit.....	12,171
Feeder cattle which entered on permit.....	788
Grass calves under six months released.....	369
Number of imported animals released at Jersey City.....	261,437

CATTLE SLAUGHTERED:

Reactors quarantined in fiscal year 1919.....	172
Reactors quarantined during year 1920 slaughtered....	1,237
	1,409
Report of Board of Health as suspected tuberculosis on physical examination and slaughtered.....	190
Report by private veterinarians as suspected tuberculosis on physical examination and slaughtered.....	107
Report by Board of Health as suspected tuberculosis on physical examination and later tuberculin tested...	142
Reactors	128

REPORT OF THE BUREAU OF MARKETS

ALEXIS L. CLARK, *Chief*

This has been a year of continued progress in marketing methods. The bureau has maintained its program under the same general plans, dealing with fundamental principles such as uniform grading, efficiency in selling, organization, and improved transportation service. There has been noted far greater recognition of the faults in present marketing practice, and surely that is a promising development. Producers, dealers, and consumers are appreciating the seriousness of the general situation for which our distribution system is at least partially responsible. Then, too, it is apparent that the interdependence among all three of these parties is felt keenly today, and instead of thoughtless criticism of each other, leading to blind prejudices, frequent constructive suggestions are offered and more cooperation exhibited.

The great attempt of the bureau to awaken the consuming public to its responsibilities in food distribution has not brought forth the results hoped for, but there has been sufficient response to warrant the bureau in making this its major project for next year.

The Advisory Committee to the Bureau of Markets has been invited to counsel with us as a body twice during the year, and its members have given freely of their time and counsel to make the work of the bureau more effective. We are glad to acknowledge our indebtedness to the Federal Bureau of Markets, which has given us invaluable assistance at all times, to various State Bureaus of Markets, and to all the institutions, departments, and municipalities which have cooperated with us during the year. Our relations with county agricultural agents have been particularly satisfactory.

Cooperative service, which has often meant real sacrifice, has been most generously given by scores of individual farmers, city housewives, and produce dealers. A movement which we hope will eventually go far in solving some of the retail marketing problems has been made possible by the enthusiastic enlistment of aid from the State Federation of Women's Clubs.

PROJECT I

Standard Grades for Market Products

This is now an old story to all who have long been interested in distribution methods. It is now accepted almost universally that products of all kinds go through the channels of distribution from producer to consumer more cheaply, more quickly, and with less confusion, when the terms denoting kind and quality are understood by all parties. Standard grades for an individual producer or group of producers do away with ignorance, deception, and delay in proportion to the wide-spread allegiance of growers to the standards. There are hundreds of cases where a New Jersey farmer grades his products uniformly day by day and year by year. Steady buyers soon come to appreciate this reliability. Every new buyer has to be educated, however. With thousands of producers and millions of buyers, individual standards, while better than no standards, are not sufficient. Great manufacturing industries first demonstrated the advantages of standard grades. Many years ago wagon builders adopted a standard width, and we can now see where civilization itself has advanced very largely because of the ease of transportation on roads made for wheel tracks of standard width. Today, door knobs and California oranges, match safes and northwestern apples go through the complicated system of distribution surprisingly easy because of their standard uniformity.

Experience in efforts to grade farm products has shown certain interesting points. Standard grades may be successfully carried out by large groups of producers through their own organization, or they may be made a law and enforced by city, state, or nation. Furthermore, there are the two distinct problems of establishing suitable grades, and of protecting or enforcing them. This bureau has adopted the policy of state grades for voluntary use and protected by law. Many nations of Europe, and Canada, have established national grades, and enforce their use. The arguments for this latter policy are that a greater quantity uniformly graded will make a better reputation than several smaller quantities each graded according to its own standard, and that in an effort to establish this reputation for reliability any independent grade detracts from the reputation of the whole. Thus, in Canada all bacon exported is graded by government inspectors. European buyers know

just what to order, and they know they will get what they do order. But of far greater importance than any of these points is the business efficiency induced by buyer and seller recognizing the same degree of quality in a given product without the necessity of immediate local inspection. This year potato growers in different parts of New Jersey contracted with buyers for United States Grade Number One stock at a certain price for fall delivery. These sales were sometimes made before the seed had sprouted. Likewise, grocery buyers order Number Two cans of an established brand of canned tomatoes a year before the crop is harvested and a thousand or two thousand miles distant from the factory where these tomatoes will be canned. This reliability is the great advantage of standardized merchandise.

These things are apparent to us all now, and, while our growers have had their troubles with potato grades, we are convinced that New Jersey growers in general are looking forward to state standard grades for all staple products. The specialist in dairy products marketing shows in his report the need for state standards, rather than so many municipal standards of market milk. Mr. Douglas S. Dilts has been with the bureau all the year and has devoted his time very largely to work on standard grades.

In cooperation with the State Horticultural Society and the Federal Bureau of Markets tentative grades for peaches were adopted. Four packing houses have agreed to cooperate with us in putting "New Jersey Fancy Grade," "New Jersey A Grade," and "New Jersey B Grade" peaches on the market in 1920.

The apple growers of Warren and Sussex counties desire to carry out the same idea with their crop. Onions, tomatoes, and sweet potatoes are other crops for which we are trying to work out grades that will be simple enough for the average grower to follow and definite enough to insure uniformity in the markets.

Mr. Dilts spent some time with Federal market agents in New York and Philadelphia acquiring experience in potato-grade inspection. This fall we hope to be in a position to certify as to grade qualifications on potato shipments in a limited way. The Federal Bureau of Markets has taken a stand against shipping point inspection by themselves, but we understand it is planning to give training courses in food products inspection to state marketing agents. The National Association of State

Marketing Officials, the executive membership of which is composed of the heads of state marketing work, is in favor of market grades in various states, as nearly similar as the different conditions will permit, protected by state inspection. Doubtless standard grades for the next few years will develop along this line, state standard grades to be adopted largely upon recommendations of the Federal Bureau of Markets, shipping point inspection to be made by state bureaus, and receiving point inspection to be made by the Federal Bureau.

Standard containers must come along with standard grades. There seems to be no new development along this line. A bill presented in Congress last winter proposed to eliminate the twenty-quart hamper. This bureau notified the State Horticultural Society and a number of interested growers, with the result that Mr. C. B. Lewis invited a representative group of men to go to Washington in defense of this popular basket. This bureau was represented at the hearing. The support of several other nearby states was secured, and the bill was amended so as to standardize the five-eighths bushel hamper, together with the other hampers mentioned in the bill.

PROJECT II

Organization

Farmers everywhere are discussing organization. The grange has passed through a year of splendid progress. The county boards of agriculture have taken hold of their local problems in a strong way and have come together to form the New Jersey State Council of County Boards of Agriculture. This body has in turn joined the American Farm Bureau Federation.

The committee appointed at the annual marketing conference in Trenton in 1919 drew up a bill which was made a law this year. It is known as Chapter 154, Laws of 1920, and is entitled "An Act to provide for the Formation and Regulation of Cooperative Agricultural, Dairy, or Horticultural Associations." Two associations have already been incorporated under this law—the Cape May County Farmers' Cooperative Packing Association and the Holly Fruit Growers' Cooperative Packing Association. New Jersey now has sound farmers' organizations for buying and selling to meet the demands of most sec-

tions in the state. The above committee, consisting of William H. Reid of Tennent, Henry H. Albertson of Burlington, and John H. Hankinson of Glen Moore, reported at the marketing conference last January that progress in formulating plans for a state-wide business organization on a cooperative basis was slow, and that no definite recommendations could be offered at that time. Several conferences have been held on this subject, but so far nothing definite has materialized.

The Mount Holly organization has taken the most forward steps yet taken in this state. There are only ten members. Their membership fee is one hundred dollars in cash and one thousand dollars in an annual note. They pledge their entire crop of peaches and apples to the Association. The Association proposes to rent a building and to install suitable sizing machinery so that the fruit can be cheaply and uniformly graded, packed and loaded. They will engage a sales manager who will be given the entire crop to dispose of.

The potato crop promises to be large this year, and this bureau urges the consideration by growers of the faults in the marketing practice as it has developed. Expert buyers pit the various selling agencies one against the other continually. These agencies are not at all in accord with each other. The product is perishable, there are no storage facilities, and it becomes practically impossible for growers to hold their market price up to cost figures excepting in years of shortage. A state-wide association, formed of local organizations and working on the cooperative non-profit basis, holds out certain advantages to meet this and other similar conditions.

PROJECT III

Transportation

Our transportation service has been developed to a still greater degree of usefulness by Mr. Harry B. Bamford, who came to the bureau in 1917 for this particular work. Apparently railroad officials have confidence in his judgment. Several of these men have stated that before Mr. Bamford started this work they could not afford to listen to farmers' complaints because they were so often of many minds. While trying to work only on routes and systems and matters of general im-

portance, it has been impossible to disregard the calls from thousands, on incidental shortages, losses, delays, embargoes, strikes, etc. We have been afraid of wearing out our welcome in many offices, but so far most freight officials give us aid in a most hearty manner.

The express business is gradually accepting our point of view in some matters, and we believe we can be of real service to the company as it recognizes our aim to build up efficient transportation service. Scores of conferences have been held on such subjects as "A Special Train for Burlington County Perishables," "Fast Freight Service for Cape May County," "Change in Routing Express from Ocean County to New York," "Changes in Closing Hours at Various Shipping Stations," "Preparing to Meet the Demand for Refrigerators at Swedesboro," "Preparing to Meet the Demand for Box Cars for Potato Shipments," etc., etc. Three conferences with express company officials prevented a ruling being made that would bar the acceptance of second-hand egg crates.

The motor truck for market hauling has grown in favor each year. Mr. Bamford participated in a "Rural Motor Express" demonstration through the central part of the state. Hauling perishables direct from the farm to distant markets is a practice that has its advantages, and it is growing. With the advent of the Camden-Philadelphia bridge and some kind of connection with New York City, more and more of New Jersey's crop of perishables will be transported by motor trucks. The practice of one large truck picking up a number of small shipments develops slowly. This should be of particular advantage to milk shippers. In some localities a majority of the farmers spend as much as three hours per day delivering three to six cans of milk to the station.

PROJECT IV

Wholesale Selling

Several phases of marketing are closely associated with this project. By next year we should have a separate project under way on market reporting. The shipping point and the receiving point inspection work, as carried on by some states and the Federal Government, is helping to solve some wholesale selling problems. State control of the produce

commission business is another practice related to these problems. This bureau has sent out daily telegraphic market reports from Newark and New York to twenty-five shipping stations in the state. The New York State Division of Foods and Markets has most kindly given us the New York report each morning, and the Newark market superintendent has supplied us with the news from that market. We believe this service could be very great, but we must make arrangements next year to receive the reports earlier in the morning so that we can get the market prices out to shipping stations by 9:30 or 10:00 o'clock. Our Weekly Market Letter mailing list was revised last winter. Seven hundred and fifty persons have requested it and have received it. This Letter reviews the wholesale market conditions on all important sasonable crops.

Contracts between growers and canning factories became a subject of much discussion last winter, and many meetings were held at which all sides of the matter were considered. Finally, a successful conference was held in Bridgeton with sixteen factories represented and thirty growers present, representing all communities, at the invitation of the Cumberland County Tomato Growers' Association. A unanimous vote that \$25.00 per ton was a fair price for tomatoes ended the meeting. This is the first occasion when these buyers and sellers have agreed on such an important subject, and we believe it opens the way for better business relations in the future.

Very little has been done with the receiving end of the wholesale selling situation except to follow up some of the arrangements made between commission merchants and producers. We have investigated five complaints against merchants and reported the cases as we found them.

PROJECT V

Retail Selling

A plan was agreed upon with the State Federation of Women's Clubs whereby the organized women of the state could take a part in constructive marketing reforms during the winter. This cooperative plan was placed in the charge of Mrs. M. J. Gross of Cranford, chairman of the Home Economics Committee of the Federation. Some real work

has been started on this very important project. Some sixteen women have reported to the bureau the retail market prices on seasonable products each Tuesday in their home cities. We have returned to them a summary showing retail prices in all cities reporting and the wholesale prices in certain cities. A maximum gross profit of fifty per cent has been urged upon retailers, and some attention has been given the effort by a number of dealers. A number of city newspapers have taken up this "Weekly Summary of Retail Prices," and we are convinced that, as a result, thousands of city housewives are thinking seriously of the underlying faults with present-day food distribution. We are satisfied that a common understanding of the evils and the problems of food marketing is the first real step toward cutting down the loss and waste now so apparent between producer and consumer. A number of addresses have been made on the subject at women's meetings. Groups of housewives have purchased large quantities of foodstuffs cooperatively, and this fall we are preparing to meet all demands in this line.

The retail farmers' market places in the various cities in the state are thriving. Mr. Hundertmark has kept in rather close touch with them all the while. Jersey City probably has made the most progress, with three well-established market places. A trip of inspection was taken to the markets at Trenton, Jersey City, Elizabeth and Perth Amboy. The party was composed of a member of the State Board of Agriculture, several representatives of the State Chamber of Commerce, the Trenton Chamber of Commerce and the Jersey City Chamber of Commerce, and representatives of several municipalities.

We have begun a study of the costs of marketing, and have the counsel of Dr. Frank App of the State Agricultural College in this work. It will include a comparison of the average costs of marketing fruits and vegetables in several different ways.

MISCELLANEOUS ACTIVITIES

It is necessary to give some time to a multitude of minor problems that are brought to the attention of the bureau or are occasioned by particularly urgent needs. Then, too, there are the necessary conventions and conferences, through which we maintain cooperative relations with Federal and other state marketing agencies. Several representa-

tives of our bureau attended the organization meeting of the National Association of State Marketing Officials in New York City on February 5. The chief of the New Jersey Bureau of Markets was elected treasurer and a member of the executive committee.

We give considerable time to the exhibits in the Armory during "Agricultural Week." The Markets' Day program brought out further interest in a state-wide cooperative business organization. We enjoyed a visit from Doctor Thompson, who was in charge of state cooperative work for the Federal Bureau of Markets. As a result of the better understanding established by his visit we arranged for several cooperative efforts on adopting peach grade standards and peach grading work, and also tomato, onion, and sweet potato grades.

LOOKING FORWARD

Progress in marketing is in its initial stage. Up to the present time, the best work has been done in learning what not to do and what is possible and practical to do. It is quite apparent that the program for New Jersey must in general follow the lines discussed in this report.

Producers must be organized locally and probably state-wide. The non-profit, one-member, one-vote plan is sound. All business is best done along practical business lines with all savings kept until the end of the season and then divided on a pro rata basis of business volume.

State standards for the grading of important products will help greatly in building up a reputation for uniformity which is such an important market advantage. These standard grades should be optional, but when products are so branded, they must conform very closely to the grade regulations. Then we must have some grade inspection and certificates from the bureau guaranteeing the grade of car-lots for distant shipping.

The interdependence of public carriers and food producers must be emphasized, and every effort made to give perishable food products the best transportation service possible.

There is a wide field left open by the United States Food Administration in the handling of wholesale selling problems.

The consuming public must be led to appreciate the economic problems which underlie present distribution evils and encouraged to lend

their cooperation in a united program with producers to work out practical remedies. There is room for good service by organized consumers' groups, both in holding a check on dealers' practices and in cooperative purchasing direct from producers.

Laws are not the greatest need to reduce the high cost of living or to eliminate waste in marketing. They may be necessary to enforce certain practices, but a vital interest in the whole subject of food distribution and a will to work together for the benefit of all must preface every attempt by our people if any measure of success is to be secured.

Report of the Specialist in Dairy Products Marketing

The program of the bureau in marketing dairy products was changed but little during the past year, there being two main lines of effort—a study of the distribution of milk in New Jersey cities, and an effort to increase consumption of dairy products. The dairy cows in the state produced in 1919 market milk for which the producer received in excess of \$25,000,000, and the consumers in the cities and towns of the state who buy their milk supply expended in excess of \$35,000,000 for this part of their food supply alone, not to mention butter, cheese and all other products of the dairy. The problem of marketing and distributing such quantities of dairy products efficiently is immense. The marketing practices now in vogue are the natural result of rapid increases in the business of those employed in distribution between the producer and the consumer, with but little attention paid to economics, hence the inefficiencies so patent to all in the distribution of all food, and particularly milk.

This bureau consulted with representative producers and distributors before attempting a study of the problem. Six men, including four representative producers and two representative buyers and handlers of milk, who were appointed last year to act as an advisory committee, met during the year to consider some of the problems involved:

1. A need for greater uniformity in the inspection of the milk supply by the various local boards of health in the state, and a greater degree of standardization of the grades of milk sold and of the terms used in designating milk of varying sanitary qualities.

2. More publicity to increase the consumption of dairy products. A

state-wide organization of the dairy industry under some plan such as that of the National Dairy Council to carry on this work.

3. A fairer price to the producer for his product, taking into consideration supply and demand of liquid milk and other milk products and costs of production.

4. The consumer is intensely interested in the price which he pays for milk. The public demands more efficient distribution of milk, thus incurring less waste and cost. This problem demands intensive study so that a fair solution may be arrived at. Confidence on the part of the public in the fairness of producers and retail prices is needed. Competitive distribution and the highest efficiency seldom go together.

Sub-committees were appointed to make a more detailed study of these problems. On some of these substantial results have already been attained.

CITY DISTRIBUTION

Investigations into the various problems involved in the marketing and distribution of our milk supply as originally outlined are being continued. A preliminary study pointing out some of the more evident wastes of the present system of marketing milk in some of the cities of the state has been completed and published in a separate bulletin.

This is to be followed by a more comprehensive investigation of the costs of milk distribution, which may be useful in explaining to the public the reason for the spread between the price which the producer receives and the cost of a quart of milk at the consumer's door. The aid of an expert accountant will be secured for this work, and it is hoped that the cooperation of distributors will be given in making a thorough study of the present costs of doing business, which must be fundamental to any improvement in methods where improvement is possible.

Costs of production of milk and of other farm products have been studied impartially and published. The producer has thereby been enabled to improve his methods, and the consumer has a better understanding of these costs. A similar study of marketing and distribution costs is just as essential, and probably more so, in order that we may have a sound basis for improving present methods and that the consumer may understand the reason for the cost of his milk.

A very satisfactory conference on "Milk Marketing Problems" was conducted on Tuesday, January 13, at which producers and distributors of milk discussed their common problems. A better mutual understanding resulted. The plan of the Dairymen's League to own country plants cooperatively by producers and to market their product was explained fully by T. E. Milliman of that organization. The plan of the Interstate Milk Producers' Association for paying for surplus production in the Philadelphia territory was fully explained by Fred Shangle of that organization. Distributors present discussed the various problems from their standpoint, and a representative of the United States Bureau of Markets explained the marketing plans of other producers' associations in the country. The conference was beneficial and helpful to a better understanding of the problems as they affect producer, distributor and consumer.

INCREASING MILK CONSUMPTION

Milk consumption is not over one-half pint per capita daily, according to the best information available, in spite of the fact that scientists who have studied nutrition declare that milk is the cheapest animal food available and has a very direct effect upon the health of our people. There is a great need for accurate knowledge on the part of the consuming public as to the value of milk and milk products, their necessity in the human dietary and what they mean to our national and human welfare. The duty of informing the public and increasing consumption of milk and its products belongs to the dairy industry. Undernourishment of children, which has been found to be a direct result of too small consumption of milk and butter, must be corrected through proper educational and advertising work. The dairy industry would be benefited by the stabilizing influence of a larger consumption, and the public would be benefited by better general health.

This bureau can do little more than to help in the organization of the dairy industry for this work. It will mean the expenditure of money and effort to get the facts before the public. The dairy industry must supply the funds and do the work largely through its own organization. A preliminary conference was held at Newark in the rooms of the State Chamber of Commerce, December 15, 1919, and was attended by rep-

representatives of producers' organizations and distributors. A temporary organization of the New Jersey Council was perfected with a board of directors of six producers and six distributors, and tentative plans were made. Another meeting was held during "Agricultural Week" at Trenton, January 14, 1920. No plan of financing was evolved owing to the inability of either of the producers' marketing associations to contribute and to the difficulty in securing sufficient funds from individual producers. No further progress has been made. It is hoped, however, that the dairy industry may be able to support a state dairy council which can further this important work and make milk and its products as popular among city consumers as they properly deserve to be. The result would be a more stable dairy industry and a more healthy public.

STANDARD GRADES OF MILK

Improvement in the safety and cleanliness of our milk supplies has made excellent progress, due largely to the realization on the part of the producer and distributor of their duty in the matter and to the educational work done by health officers charged with safeguarding the supply. Many municipal health departments have at various times within recent years outlined certain grades for milk and requirements for producing and handling these grades. Others have no system of grading, and dealers, themselves, have adopted systems of their own in many such instances. Consumers demand a good milk supply and are entitled to it, and producers and dealers will deliver a satisfactory product if paid for the extra labor and other costs involved.

It is believed that greater uniformity in the grades of milk sold in the various municipalities of the state would be an advantage to producer, distributor and consumer alike, just as standardization of other food products has facilitated marketing all along the line. This problem is receiving the attention of the bureau.

COOPERATION WITH PRODUCERS' MARKETING ASSOCIATIONS

As in the past, this bureau is always ready and willing to cooperate with the two producers' marketing organizations in the state—the Dairymen's League in the north supplying the New York metropolitan area, and the Interstate Milk Producers' Association in the south sup-

plying milk to the Philadelphia area. Collective marketing as conducted by these two organizations has been of immense benefit to producers and consumers, and most of the large milk distributors recognize the value of these organizations, their importance in stabilizing the production end of the business, and the good which has been accomplished generally. Certainly it was fortunate that the dairy industry was thus organized during the trying days of the war. The plan of the Interstate Milk Producers' Association of paying for surplus production inaugurated last fall through the cooperation of dealers and producers is a concrete illustration of the value of such collective action. This plan will go far towards avoiding the complicated problem of overproduction at certain seasons of the year and underproduction at others.

These producers' organizations will do much to promote more efficient production, improvement in the quality of the milk supply, a fairer price for the farmers' product, and hence a better contented and more stable producing industry, and more efficient marketing and increased consumption. These are the fundamental principles upon which these organizations are founded and in the promotion of which this bureau will do everything possible.

MILK AND CREAM CONTEST, AGRICULTURAL WEEK

The Milk and Cream Contest held in connection with "Agricultural Week," Trenton, New Jersey, January 13-16, brought out some very good samples of milk, as is shown in the list of exhibitors below receiving an average score of ninety or above. Those winning first prize were awarded a gold medal, and a bronze medal was awarded to those winning second highest score. All those receiving a score of ninety or over were also given a diploma.

This contest was held in connection with the annual meeting of the New Jersey State Dairymen's Association and aroused considerable interest in the production of better milk and cream.

George B. Taylor, of the Dairy Division, United States Department of Agriculture, superintended the contest and had charge of the laboratory work connected with the scoring of the samples. The State Department of Health laboratory was used for this purpose.

The exhibitors receiving an average of ninety or above, Milk and Cream Contest, Agricultural Week, were as follows:

Raw Milk

Craig Tallman, Columbus.....	99.4	Henry Becker & Son, Roseland..	96.5
Elmer L. Tallman, Columbus....	99.2	J. W. Miller, Princeton.....	96.5
Budd W. Pope, Columbus.....	98.6	Walter L. Reeder, Columbus....	96.0
Edward D. Lentilhon, Middle-		Clifford Keen, Woodstown.....	93.8
town	98.3	John V. Bishop, Columbus.....	92.9
J. G. Fenimore, Columbus.....	98.1		

Certified Milk

Columbia Milk Farm, Juliustown.....	99.1
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Pasteurized Market Milk

Supplee-Wills-Jones Milk Company, Philadelphia.....	99.1
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Raw Market Cream

Craig Tallman, Columbus.....	97.2	Walter L. Reeder, Columbus....	90.7
Clifford Keen, Woodstown.....	95.9	Edward D. Lentilhon, Middle-	
J. G. Fenimore, Columbus.....	94.6	town	90.2
Elmer Tallman, Columbus.....	94.6		

Pasteurized Market Cream

Supplee-Wills-Jones Milk Company, Philadelphia.....	98.5
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Many of the samples of milk submitted to this contest were specially prepared. It is planned to have two classes for the next contest—one for prepared samples and another for milk and cream as it is sold every day, so as to secure some idea of the exact quality of the market milk of the state and furnish a stimulus for improvement.

REPORT OF ASSISTANT DIRECTOR OF FARMERS' INSTITUTES

WILLIAM H. HAMILTON

The State Department of Agriculture continued its policy of giving the farmers of a community as much responsibility as possible in arranging farmers' institute meetings, in order that the particular needs of the community might be met.

During the early fall the assistant director of institutes met with the county agents and executive committees of the various county boards of agriculture to discuss general plans for the county. These plans were taken up, largely by the county agent, with the community committee in the community where the institute was to be held. This committee decided upon the kind of meeting to be held and the subjects to be discussed. The success of the meetings depends very largely upon the responsibility that the individual committees assume.

The Department endeavored to secure the best speakers available and the ones that would particularly fit the community in which the meeting was to be held. Due to the great diversity of agricultural interests within the state a large number of speakers was used during the season, the total number being 114. The following is a list of speakers used during the year:

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. Dr. Frank App, Department of Agronomy and Farm Management.
5. Prof. H. R. Lewis, Department of Poultry Husbandry.
6. Prof. F. G. Helyar, Director of Short Courses.
7. A. M. Hulbert, State Leader of Boys' and Girls' Club Work.
8. Mrs. Frank App, State Leader of Home Demonstration Work.
9. Prof. A. J. Farley, Horticultural Department.
10. A. Freeman Mason, Specialist in Horticulture.
11. Miss Marjory A. Eells, Home Demonstration Work.
12. Miss M. Ethel Jones, Assistant State Club Leader.
13. J. B. R. Dickey, Extension Specialist in Soils and Agronomy.
14. Prof. G. W. Musgrave, Assistant Professor of Agronomy.
15. Prof. A. W. Blair, Associate Soil Chemist.
16. C. H. Nissley, Extension Specialist in Market Gardening.
17. Prof. L. G. Schernerhorn, Associate Professor in Market Gardening.
18. Prof. W. M. Regan, Department of Dairy Husbandry.
19. J. W. Bartlett, Extension Specialist in Dairying.

FIFTH ANNUAL REPORT

20. V. G. Aubry, Extension Specialist in Poultry Husbandry.
21. Dr. Willard C. Thompson, Assistant Poultry Husbandman.
22. Dr. W. H. Martin, Associate Plant Pathologist.
23. I. L. Owen, Superintendent, College Farm.
24. Prof. Merle S. Klinck, Professor of Rural Engineering.
25. C. M. Haensler.
26. Stanley B. Roberts.
27. H. R. Cox, County Agent, Camden County.
28. I. T. Francis, County Agent, Essex County.
29. A. E. Wilkinson, County Agent, Atlantic County.
30. J. B. Turpin, Mercer County Club Leader.
31. Elmer H. Wene, Superintendent, Egg-Laying Contest, Vineland.
32. Miss Carolyn F. Wetzel, Home Demonstration Agent, Bergen County.

State Department of Conservation and Development

1. Miss Helen Perry, Curator, State Museum.

State Department of Public Instruction

1. Dr. F. W. Maroney, Director of Physical Education.

State Department of Health

1. David C. Bowen, Chief, Bureau of Local Health Administration.

State Department of Agriculture

1. Alva Agee, Secretary.
2. A. L. Clark, Chief, Bureau of Markets.
3. P. B. Bennetch, Specialist in Dairy Products Marketing.
4. William L. Hundertmark, Market Specialist.
5. Douglas S. Dilts, Market Specialist.
6. Dr. J. H. McNeil, Chief, Bureau of Animal Industry.
7. Dr. H. H. Bair, Inspector in the Bureau of Animal Industry.
8. Dr. L. E. Green, Inspector in the Bureau of Animal Industry.
9. Dr. T. J. Headlee, State Entomologist.
10. Dr. Mel. T. Cook, State Plant Pathologist.
11. E. G. Carr, Deputy Bee Inspector.

Practical Farmers

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|------------------------|-----------------------|
| 1. Charles D. Barton. | 15. D. Henniger. |
| 2. G. D. Brill. | 16. William Horrocks. |
| 3. John Casazza. | 17. T. R. Hunt. |
| 4. Joseph H. Cohen. | 18. J. M. Hunter. |
| 5. John W. DeBaun. | 19. H. W. Jeffers. |
| 6. R. W. DeBaun. | 20. A. R. Kohler. |
| 7. Earle Dilatush. | 21. C. B. Lewis. |
| 8. Thomas J. Durell. | 22. E. E. Madara. |
| 9. B. S. Ells. | 23. John Middleton. |
| 10. Fred Gardner. | 24. J. W. Miller. |
| 11. William Garwood. | 25. Walter L. Minch. |
| 12. A. L. Gaventa. | 26. William M. Mount. |
| 13. John H. Hankinson. | 27. Warren W. Oley. |
| 14. J. C. Hendrickson. | 28. Leslie Platts. |

Practical Farmers—(Continued)

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| 29. C. B. Probasco. | 35. Harry E. Taylor. |
| 30. George T. Reid. | 36. W. W. Titsworth. |
| 31. Emmor Roberts. | 37. J. Percy Van Zandt. |
| 32. Henry Schmidt. | 38. C. N. Warner. |
| 33. E. A. Sexsmith. | 39. A. E. Young. |
| 34. John B. Stratton. | |

Miscellaneous

1. Miss Sarah B. Askew, Public Library Commission.
2. Miss L. Ray Balderston, Teachers' College, Columbia University.
3. Miss Laura I. Baldt, Teachers' College, Columbia University.
4. Floyd S. Barlow, Cooperstown, N. Y.
5. B. S. Bowdish, Secretary, New Jersey Audubon Society.
6. Charles Shepard, Herkimer, N. Y.
7. Dr. J. Melvin Bush, Montclair.
8. F. A. Carroll, County Agent, Berkshire County, Mass.
9. H. W. Collingwood, Editor Rural New-Yorker.
10. Miss Louise Connolly, Free Public Library, Newark.
11. Dr. Forrest E. Dager, Philadelphia.
12. Rev. Alfonso Dare, Haddonfield.
13. J. P. Dixon, Princeton.
14. W. B. Duryee, Field Secretary, North Jersey Agricultural Society, New York City.
15. Miss Mary E. Goodell, Women's College, New Brunswick.
16. Prof. A. E. Grantham, Agricultural Experiment Station, Newark, Del.
17. Prof. L. R. Hartill, New York State School of Agriculture, Farmingdale, N. Y.
18. Walter H. Havens, Master, New Jersey State Grange.
19. Mrs. Janet Bush Hecht, Montclair.
20. F. Hendrickx, Bobbink and Atkins, Rutherford.
21. Miss Lauretta P. James, State Normal School.
22. Dr. T. C. Johnson, Virginia Truck Experiment Station, Norfolk.
23. J. Franklin Meehan, Mount Airy, Philadelphia.
24. S. Mendelson Meehan, Mount Airy, Philadelphia.
25. Mrs. Rose Morgan, New York City.
26. Mrs. Wesley O'Leary, Trenton.
27. Dr. L. F. Rettger, Sheffield Scientific School, New Haven, Conn.
28. Isaac O. Taylor, Hurlock, Md.
29. Jared VanWagenen, Jr., Lawyersville, N. Y.
30. Rev. R. M. West, Secretary, New Jersey State Baptist Convention.

MEETINGS

Last year the tendency was toward a greater number of one-session meetings, covering special subjects in which the community was interested. While this gave the usual number of meetings held, the total number of sessions and the total attendance were somewhat lowered. However, greater interest was shown and probably a greater number of individuals was reached.

The following list shows the locations of the meetings held:

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|---------------------------|---------------------------|
| OCTOBER | 20, Ramsey. |
| 29, Beverly. | 21, Little Ferry. |
| NOVEMBER | 22, Brookdale. |
| 8, Allentown. | 24, Plainsboro. |
| 13, Vincentown. | 26, Franklinville. |
| 17, Vernon. | 26, Crosswicks. |
| 18, Hamburg. | 27, Dayton. |
| 18, Sussex. | 27, Wyckoff. |
| 18, Mt. Freedom. | 28, Berlin. |
| 19, Branchville. | 28, Malaga. |
| 19, Chesterfield. | 28, Lambertville. |
| 19, Lafayette. | 29, River Edge. |
| 19, Mt. Bethel. | 30, Stelton. |
| 20, Fredon. | 31, Pattenburg. |
| 20, Tranquility. | FEBRUARY |
| 21, Layton. | 3, Wall. |
| 21, Medford. | 3, Woodbine. |
| 21, Montague. | 4, Pine Brook. |
| 21, Washington. | 5, Blue Anchor. |
| 24, Bridgeton. | 10, South Seaville. |
| 29, Cape May Court House. | 12, Union. |
| DECEMBER | 17, Hammonton. |
| 2, Hackettstown. | 17, Thorofare. |
| 1, Blairstown. | 18, Landisville. |
| 4, Bernardsville. | 19, Bargaintown. |
| 5, Sewell. | 20, Leeds Point. |
| 6, Freehold. | 25, Ringoes. |
| 9, Dividing Creek. | 25, Cross Keys. |
| 9, Fairlawn. | 28, Green Creek. |
| 9, Marlton. | 28, North Haledon. |
| 9, Mullica Hill. | MARCH |
| 10, Belvidere. | 2, Long Valley. |
| 10, Blackwood. | 2, Norma. |
| 10, Somerville. | 5, Trenton. |
| 11, Gouldtown. | 9, Eldora. |
| 10, Shiloh. | 9, Tennent. |
| 11, Shiloh. | 13, Cape May Court House. |
| 11, Woodstown. | 13, Franklin Park. |
| 12, Morristown. | 17, New Monmouth. |
| 12, Rosenhayn. | 18, Elizabeth. |
| 12, Lawrenceville. | 18, Harmony. |
| 13, Lawrenceville. | 19, New Egypt. |
| 12, Roseland. | 23, Herbertsville. |
| 13, Belleplain. | 24, Mts. Crossing. |
| 17, Swedesboro. | 25, Laureton. |
| 18, Cedarville. | 31, Manahawkin. |
| 19, Vineland. | APRIL |
| 20, New Brunswick. | 1, Toms River. |
| JANUARY | 6, New Monmouth. |
| 5, Hackensack. | MAY |
| 9, Harmersville. | 8, Elmer. |

ATTENDANCE

The following tabulation shows by counties the number of meetings, the number of sessions, total attendance, and attendance per session. Severe storms and almost impassable conditions of roads in February and March materially reduced the attendance. In fact, during one week it was necessary to cancel five meetings on account of snow storms.

COUNTIES	Number of Meetings	Number of Sessions	Attendance Per Session	Total
1. Atlantic	4	7	39.3	275
2. Bergen	6	11	71.4	785
3. Burlington	6	12	84.8	1,018
4. Camden	3	5	49.0	245
5. Cape May	7	11	29.0	319
6. Cumberland	7	15	64.1	962
7. Essex	1	3	55.0	165
8. Gloucester	7	10	44.9	449
9. Hunterdon	3	8	57.5	460
10. Mercer	2	4	95.0	380
11. Middlesex	5	10	71.0	710
12. Monmouth	6	11	117.7	1,295
13. Morris	4	7	93.0	650
14. Ocean	7	9	26.5	239
15. Passaic	2	4	65.2	261
16. Salem	4	6	54.2	325
17. Somerset	3	6	46.2	277
18. Sussex	9	19	57.6	1,095
19. Union	2	2	35.0	70
20. Warren	4	7	72.0	484
Totals	92	167	62.6	10,464

County agents, county boards of agriculture and community committees, and the men and women who rendered service as speakers, deserve much credit for the success of the meetings.

REPORT OF THE BUREAU OF STATISTICS AND INSPECTION

HARRY B. WEISS, *Chief*

The following report is for the fiscal year ending June 30, 1920, and covers in a brief way the varied activities of the bureau during that time.

In our plant inspection work we have been of direct service to many fruit growers, and the growing demand for and appreciation of our services in this line is very gratifying.

Our certification of late crop seed potatoes, in cooperation with the State Potato Association, was begun last year, and the results are given later in this report. It is expected that applications for this service will be much more numerous this season.

In the matter of complaints made to us concerning diseased or infested orchards adjoining healthy ones, we have been fortunate in securing abatements of such conditions by visiting the owners of the diseased orchards and securing their friendly cooperation in removing the causes.

In a similar way, where nursery stock is condemned by our inspectors every effort is made to secure an adjustment which will be satisfactory and fair to the purchaser.

Our statistical service shows a healthy growth. During the latter part of the year a change for the betterment of the service was made by cooperating with the Federal Bureau of Crop Estimates in the issuance of joint reports.

A survey of the important commercial peach and apple sections was conducted in cooperation with the Bureau of Markets during the winter of 1919-20, and the results have been published in a Department circular. It is hoped that somewhat similar surveys can be made in the future for other important agricultural activities, and that such work can be made a permanent part of the bureau's constructive program.

During the last few days of June a colony of gipsy moth caterpillars was found on a large estate near Somerville, severe damage having been

done in a restricted area. At the present writing plans are being laid, in cooperation with the Federal authorities, for a scouting of the territory in order to determine the extent of the infestation, after which extermination measures will be applied.

So far as is known, and after searches, the state is believed to be free of the brown tail moth, European corn borer and the potato wart disease, and the white pine blister rust is gradually being eliminated.

The green Japanese beetle problem can not be said to have been solved. The work at present consists of the prevention of spread by barriers and quarantine measures, the discovery of practical control measures and the introduction of natural enemies from Japan. Opposed to these are the facts that the beetle is a strong flier and easily disseminated, that it feeds on a large number of hosts, that it is difficult to poison, that it is repelled by most arsenicals, and that it spends about five-sixths of its life underground where it is usually difficult to locate and hard to reach with insecticides. An account of the work accomplished in connection with the control of this insect is given in the body of the report. Department Circular 30, by Mr. J. J. Davis, deals with the life history, food plants and control of this beetle.

The beekeeping interests of the state have been advanced through the schools conducted by Mr. E. G. Carr, wherein the attention of bee owners has been directed to the principles of profitable bee husbandry, the control of bee diseases, and increased honey crops. This and other related bee husbandry matters are treated at length in the report on bee inspection.

STATISTICAL SERVICE

This work has progressed in a normal manner. The number of correspondents on our lists at present is over 600, which includes general, special, livestock, cranberry, honeybee, poultry and fruit reporters. Enough credit cannot be given to these men for their voluntary services. The entire service is based on their cooperation and willingness to furnish us with the necessary estimates.

During the fiscal year, July 1, 1919, to June 30, 1920, crop reports were issued regularly each month except February. In addition to estimates on crop conditions, acreages, yields and total production, num-

bers and condition of livestock, these reports contained information and illustrations dealing with the Japanese beetle, European potato wart disease, tractors, egg production, distribution of capital on poultry farms, upland acreage in improved farms, fertilizers and feeding stuffs, the sale of farm products, car-lot shipments from New Jersey, butter and milk prices, potato production and prices to producers, and strawberry acreages, together with other miscellaneous crop statistics for New Jersey. As this material has appeared in our monthly reports, it is not necessary to repeat any of it here.

VALUE OF THE CROP REPORTING SERVICE

It is believed that the crop reporting service is of practical value:

- (1) To farmers, by supplying them with dependable, unbiased information regarding crop and livestock conditions, prospects and production, in other counties and states, thus enabling them to plan for marketing their products to the best advantage. Prices are stabilized, better prices are secured because of the reduction in risk and uncertainty to buyers and dealers, and the issuance of false and misleading reports by speculators is discouraged.
- (2) To farm organizations, by furnishing for their guidance dependable and unbiased data with respect to acreage, production, number of livestock and farm surpluses.
- (3) To marketing agencies, Federal, state and private, by supplying them with dependable and timely information as to present and prospective marketable surpluses on farms, necessary to enable them to conduct marketing operations economically and profitably.
- (4) To county agents and extension forces of the State Agricultural Colleges, by making available to them dependable and timely information as to acreages, yields per acre, production, and numbers of livestock in each county, thus enabling them to plan and conduct their work intelligently and effectively.
- (5) To banks and financial institutions, which need current crop and livestock data in order to provide funds for financing the growing, storage, marketing and movement of farm products.
- (6) To transportation companies, which need information as to present and prospective tonnage of surplus agricultural products in each county in order that an ample supply of cars may be furnished to move crops after harvest.
- (7) To manufacturers, who must know as far in advance as possible the prospective crop production by counties and states in order that the necessary raw materials may be purchased and manufactured into farm machinery, equipment and supplies, and distributed to the sections where crop conditions indicate they will be needed.
- (8) To business men, who need dependable crop estimates because the success or failure of crop production is intimately related to and greatly influences business conditions.

(9) To the Federal Department of Agriculture and other branches of the Federal and State Governments which base much of their constructive programs and action upon such data as are afforded by current crop and livestock reports.

(10) To Congress and the State Legislatures, which are guided by statistical data in framing constructive legislation in the interests of agriculture.

(11) To the press, which needs and uses crop and livestock estimates and data in the discussion of current agricultural questions.

(12) To educators, public speakers, writers, economists, investigators, students and others, who find in the crop and livestock estimates material of value and interest.

COOPERATION WITH UNITED STATES DEPARTMENT OF AGRICULTURE

During April, 1919, an agreement was entered into with the Bureau of Crop Estimates, United States Department of Agriculture, for the purpose of publishing joint crop reports. The first joint report was that for May, 1920, which appeared under the heading "New Jersey Co-operative Crop Reporting Service." It was felt that such cooperation would be beneficial in that a duplication of effort would be avoided, a greater accuracy of figures would be obtained by more reports, the scope of the reports could be broadened by obtaining timely figures dealing with crop conditions in other states in which New Jersey growers would be interested, and the Federal machinery would be available for interpreting results. In addition to these, there are several minor benefits.

It is our object to make these joint reports as valuable and useful as possible, and it is hoped that we will be able to publish county figures in the near future.

PEACH AND APPLE SURVEY

In cooperation with the Bureau of Markets, a survey of the important commercial peach and apple sections of the state was made during the winter of 1919-20 and the spring of 1920. It was felt that the demand for such a survey, coupled with the importance of these industries and the lack of definite knowledge concerning them, fully justified this work. The results of this survey, together with other appropriate matter, have been published as a Department circular.

Report of the Inspection Service

PLANT INSPECTION

HARRY B. WEISS, *Chief*

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

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

FOREIGN NURSERY STOCK INSPECTED

During the past fiscal year 1,778 cases of foreign nursery stock imported into New Jersey were inspected. The following table shows the countries of origin, number of cases, etc. Most of the stock consisted of bulbs and orchids, with a small amount of roses and fruit. The stock was comparatively free of pests. A few infestations by mites and the narcissus fly were found in several shipments of bulbs.

Nine hundred and fifty-nine cases, mostly of bulbs from Holland, France and Japan, were not inspected in view of the fact that such stock was not considered likely to carry serious pests and because our inspection force was not large enough to cover the ground in a short period of time.

SUMMARY OF FOREIGN NURSERY STOCK INSPECTED

Country of Origin	Number of Cases
Venezuela	154
Belgium	12
Guatamala	2
U. S. Colombia	132
Canada	16
Mexico	2
Brazil	12
England	45
Japan	103
China	18
Ireland	6
Bermuda	45
France	603
Holland	614
Australia	8
Azores	6
Total	1,778

DOMESTIC STOCK INSPECTED DURING FALL OF 1919

State of Origin	Number Cases	Number Truckloads	Number Carloads	Number Shipments Containing Crown Gall
Alabama	2			
California	10		1	
Connecticut	19			
Delaware	1			
Missouri	6			3
Massachusetts	21			
Maryland	39			11
New Hampshire...	2			
New Jersey	4			3
New York	15		2	4
Ohio	44			
Pennsylvania	29	1		1
Tennessee	3			
Rhode Island.....	5			
Totals	200	1	3	22

DOMESTIC STOCK INSPECTED DURING SPRING OF 1920

State of Origin	Number Cases	Number Truckloads	Number Carloads	Number Trees Rejected on Account of Crown Gall
Alabama	29		3	1,802
California	127			
Connecticut	8		2	669
Delaware	4			
Indiana	1			45
Iowa	5			23
Kansas	1			
Maryland	33		3	904
Missouri	21			309
Michigan	1			
New York	62		2	4,294
Ohio	15			1
Pennsylvania	6	2		478
Tennessee	3			715
Totals	316	2	10	9,240

The domestic shipments inspected during the year consisted mostly of fruit stock. A few cases of roses and other ornamentals were looked over. Nearly all of the trees rejected on account of crown gall and

hairy root were apple. In all cases replacements were made or the money was refunded by the nurseries responsible for shipping the diseased stock. A steady and growing demand for the inspection of fruit shipments continues in the southern counties of the state. With one exception, the ornamental stock inspected during the year was found satisfactory. This exception consisted of a carload of palms from California. It was necessary to destroy part of this shipment on account of a severe infestation by scale insects and mealy bugs.

NURSERY INSPECTION

This work is conducted during July, August and September, during which months every nursery is visited and the growing stock inspected for insect pests and plant diseases. The sources of the stock which dealers handle are also investigated, and such left-over stock as they possess is inspected before certificates are issued.

During 1919, 184 certificates were issued. The following table shows the distribution of these certificates:

General certificates.....	124
Dealers' certificates	28
Berry certificates	14
Greenhouse certificates	10
Peach certificates	8
Total	184

SPECIAL CERTIFICATES

Eleven special certificates were issued after inspections had been made enabling various parties to ship nursery stock in compliance with the laws of New Jersey and other states.

SPECIAL INSPECTIONS

During the year twenty-eight special inspections were made. Many of these were in response to requests by various individuals for advice concerning plant pests. Others were made for the purpose of enabling citizens to comply with various state laws governing the shipment of plants from New Jersey. A few were concerned with complaints of the presence of diseased trees which constituted a menace to adjoining plantings.

POTATO WART INSPECTION

The discovery of potato wart in Pennsylvania led to scouting for it in this state in cooperation with the Federal Department of Agriculture. Fortunately, nothing was found.

The reported case of potato wart at Vineland turned out to be a false alarm. During the summer of 1919, a Federal scout, Doctor Bakke, covered various sections of the state, and his findings were negative. An unsuccessful attempt was made to locate some twenty foreign families which had moved from the infested district of Pennsylvania to various New Jersey towns, in order to determine if they brought diseased potatoes into the state.

POTATO INSPECTION AND CERTIFICATION

The Department has cooperated with the New Jersey State Potato Association during the past year in the inspection and certification of seed potatoes. Thirteen growers made application for certification of late crop seed potatoes. These applications came from the following counties:

Cumberland	105	acres
Mercer	10.5	acres
Camden	15	acres
Salem	18	acres
Burlington	5	acres
Total	153.5	acres

The following table shows the results of the two inspections:

Variety	Field Inspection			Tuber Inspection	
	Acres Inspected	Acres Rejected	Acres Passed	Acres Rejected	Acres Passed
Irish Cobbler....	127	0	127	98	29
Giant	22	17	5	0	5
Green Mountain.	2.75	0	2.75	0	2.75
Mill's Prize.....	1.25	0	1.25	0	1.25
Norcross5	.5	0
Totals	153.5	17.5	136	98	38

WHITE PINE BLISTER RUST WORK

White pine blister rust infestations found in and near nurseries since 1916 in New Jersey are as follows:

Locality	1916	1917	1918	1919	1920 to July 1
Rutherford	15 pines	9	0	0	0
Little Silver.....	1 (on currants)	1 (on currants)	0	0	
Clementon (not near a nursery)			2 pines	0	
Eatontown	3 pines	0	0	0	0
Red Bank	1 (on currants)	1 (on currants)	4 (on currants)	1 (on currants)	
Millburn	1 pine	0	0	0	0
Morristown	48	6 pines	3 pines	0	
Blue Anchor.....				1 (on currants)	
	67 pines	15 pines	5 pines	0 pines	0 pines

The above table shows that the blister rust has been decreasing in importance in New Jersey during the past several years. Infested pines were destroyed whenever found, and the currants were either destroyed or defoliated.

In all of the scouting work conducted in New Jersey we have enjoyed the cooperation and help of the scouts of the United States Department of Agriculture.

At the present writing (July 1, 1920) no infested pines have been found at any of the above localities.

TERRAPIN SCALE SCOUTING

This insect is recognized as a pest in several peach states. Its discovery in the southern part of this state on the peach seemed to demand that some scouting should be done in order to ascertain the degree of infestation. Scouting was accordingly done at Moorestown, Westmont,

Haddonfield, Glassboro, Vineland, Hammonton, Riverton, Sewell, Landisville and Buena, but nothing of a serious nature was found. A few infestations were discovered only at Westmont and Moorestown. Although this insect is regarded as a pest in some other states it has not reached that stage in New Jersey.

EUROPEAN CORN BORER INSPECTIONS

In view of the fact that this pest was supposed to have been introduced in this country in broom corn, an effort was made during the past year to trace shipments imported into New Jersey from Europe. Broom factories in Newark, Rutherford and Trenton were visited and others gotten in touch with by mail. Reports were also received from various charitable institutions using broom corn. From none of these sources was any promising clue obtained. During the past two or three years some scouting work was done by our own men, but nothing was found. Therefore, as far as is known, no infestation exists in New Jersey.

EXHIBITS

An exhibit consisting of maps, charts, etc., showing some phases of bureau work, was prepared and exhibited during "Agricultural Week." In connection with this, the Bobbink and Atkins Nursery, the Henry A. Dreer Company, and the Princeton Nurseries exhibited nursery stock suitable for New Jersey plantings. For their cooperation and kindness in this matter the thanks of the bureau is extended.

THE GREEN JAPANESE BEETLE

Four years ago, in August, the green Japanese beetle was found in small numbers on weeds and ornamentals at Locust Farms, about one mile east of Cinnaminson in Burlington County, New Jersey. The method by means of which it made its way from Japan to this country and the time when the introduction took place are matters about which there can be no great degree of certainty. Curiously enough the introduction appeared not to have gotten a foothold, or at least has not been discovered as having done so, in any other part of the United States.

The wide range of food plants and the tremendous numbers in which the beetles appeared led to the conclusion that it was an insect the activities of which should be studied with a view to possible eradication. At the end of the year 1917, the United States Secretary of Agriculture set aside a sum of \$5,000 for the period ending June 30, 1918, and placed in his regular request for appropriations an additional sum of \$5,000 to become available July 1, 1918. The New Jersey Legislature during the session of 1918 appropriated the sum of \$5,000 to become available on July 1, 1918, making a total sum of \$15,000 with which to attack the problem.

The line of attack selected involved the following operations:

- (1) A thorough study of the insect's life history and habits, and of methods of destroying it.
- (2) Suppression of the insect by the use of arsenical poisons and by hand picking.
- (3) Prevention of spread by keeping covered with arsenical poisons a wide band entirely surrounding the infested area.

The studies of the active summer season of 1918 brought out additional facts relative to all three of these lines of endeavor.

The beetles were found to attack the foliage of many cultivated trees, shrubs and plants.

The grubs in the soil were found to feed upon decaying vegetable matter, and also to some extent upon the roots of live plants.

The insect passed the winter as a grub in cells 6 to 12 inches below the surface of the soil. It returned to near the surface early in April and began feeding on decayed vegetation in the soil, maturing and changing to pupa during the period from the last of May to early July. The adult beetles began to emerge in the latter part of June and continued through July and the early part of August. Egg-laying began shortly after emergence of the beetles and continued until the middle of September, at which time most of the adults disappeared. The eggs were placed in the soil, and the resultant larvae fed on decaying vegetation and, to a certain extent, live roots during the late summer and fall until checked by cold weather, when they prepared cells 6 to 12 inches below the surface and there entered dormancy for the winter months. There was only one brood a year.

It was determined that the larvae or grubs could be killed by treating the soil with sodium cyanide dissolved in water at the rate of 100 pounds to the acre. Suppression work consisted in cyaniding the heavily infested portions of the area during the spring of 1918, in hand picking the beetles during the egg season, and in the establishment and maintenance of the arsenical poison band referred to above.

The insecticidal studies showed that the beetles were repelled by the ordinary sulpho-arsenical dusts, and also by arsenate of lead alone when applied as a spray.

The efforts to prevent spread were not successful, the known area of infestation increasing to 15,000 acres, or nearly 24 square miles.

In view of the rapid spread of the insect, regardless of all efforts to control, and the fact that the progress in experimental work, especially in the direction of efficient artificial control by insecticides, had been very limited, it was decided in the season of 1918 by the committee in charge, consisting of Dr. A. L. Quaintance representing the Federal Bureau of Entomology and Dr. T. J. Headlee representing the State Department of Agriculture, that the idea of eradicating the pest would have to be discontinued and that the effort must necessarily be directed toward the following activities:

(1) Retarding the spread of the insect by placing and carrying out a general quarantine and by suppression of the pest within the infested area.

(2) Introduction of natural enemies from the insect's original home in Japan.

(3) Emphasizing the search for artificial measures of control.

The area had now become so large that more funds would obviously be required to carry out the program. Accordingly, the Secretary of Agriculture asked Congress at various times to provide an aggregate sum of \$130,000, about \$100,000 of which was actually made available. The state was asked to provide \$15,000 as its share. The counties of Camden and Burlington and the local municipalities were asked to make an appropriation. All told, during the season of 1919-1920 the sum of approximately \$130,000 was made available for work against this insect.

During the winter of 1919 and 1920 the growth on all the roadsides throughout the infested area and all the headlands in a band one-half

mile wide around the entire area was cut off and burned. Vegetation succeeding this work of cutting off has been killed by the application of salt. Such orchards and other economic food plants as occurred within the band have been kept treated with a mixture of sulphur and lime. The purpose of this operation was to prevent spread, both by the insect proceeding on the wing and by being carried out on vehicles passing through the area.

Hand picking has been carried on in the heavily infested areas, and a vast number of adult beetles thus destroyed.

All nursery and farm products passing out of this area have been carefully examined and allowed to proceed only when the inspection force felt reasonably certain that no beetles would thus be carried out.

Studies of artificial measures of control have not yet resulted in a discovery of a satisfactory insecticide for the adult beetles, but good progress seems to have been made in that direction. Studies relative to the clearing of plants with soil around their roots from grub infection have gone forward, but as yet no satisfactory method has been found.

One predaceous beetle has been sent to the laboratory by the investigator in Japan and is being tried out under controlled conditions.

The net results of these operations to date have been:

(1) The beetle now occupies in New Jersey approximately fifty square miles and has been carried across the Delaware River into Pennsylvania in the location between Holmesburg and Torresdale.

(2) The discovery of several encouraging leads along the line of artificial control by insecticides.

(3) Accumulation of a large amount of data relative to the destruction of grubs in the soil about the roots of plants.

(4) Importation of one predaceous enemy of this insect.

All hope of eradication must be given up and efforts directed toward delay in spread of the insect. Utmost energy must be given to the finding and importing of the natural enemies. Utmost emphasis must be placed upon the finding of satisfactory artificial measures of control through the use of insecticides.

Fortunately the experience of the past three seasons indicates that the beetle is extraordinarily fond of smartweed, and that while it will attack all varieties of orchard trees, ornamentals and vegetation of

various kinds, it is easily repelled from them by the use of arsenical dusts, such as arsenate of lead. The experience of the past three years also gives basis for the hope that with the introduction of natural enemies and the discovery of satisfactory artificial measures of control the insect will not accomplish any considerable amount of damage, but it is obvious that the speed of spread should be reduced to the lowest possible extent, in order that the natural enemies may catch up with the same, and that satisfactory artificial measures of control must be found. Otherwise, the infested territory is certain to suffer very considerable economic losses.

Bee Inspection

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

INTRODUCTION

The work of bee disease control and the advancement of beekeeping within the state has much increased during the past fiscal year, and splendid progress along both lines has been made.

LAW ENFORCEMENT

Inspection for bee diseases resulted in the examination of 190 apiaries containing 1,843 colonies of bees. Seventy-three colonies were found housed in boxes, and the remainder in some type of movable frame hive. Of the colonies found diseased, 69 were infected with American foulbrood and 35 with European foulbrood. A small number were found with a slight infection of sacbrood, but no colony was suffering any damage from the latter disease. Measures were taken to have the diseased colonies properly treated.

The area of American foulbrood in the vicinity of Moorestown has been reduced, three beekeepers having eliminated it from their apiaries.

The last diseased colony of a rather heavy infestation in the Pattenburg-Mount Pleasant area was treated this season, and it is believed this area is now free of this disease.

Beekeepers in general are having better control of European foul-

brood through the use of better stock and better beekeeping. The manner of transmission of this disease is not so definitely known as in the case of American foulbrood, and its eradication is not so certain to follow law enforcement measures.

In order that no disease be carried through the transmission of queen bees, queen rearers' apiaries were examined, found free of diseases and certificated as follows:

Robert B. Spicer, Wharton, Morris County, July 23, 1919, and May 20, 1920.

J. Field Garretson, Bound Brook, Somerset County, July 28, 1919, and June 7, 1920.

Evan Jones, Franklinville, Gloucester County, June 7, 1920.

EDUCATION AND ORGANIZATION

The outstanding need of beekeepers in the state is a better knowledge of the successful handling of bees. This is evidenced both by observation and by the greatly increased demand for information along this line. With this in view every opportunity has been embraced which would serve to disseminate beekeeping information.

Twelve schools for beekeepers were held during the winter months at Morristown, Cape May Court House, Woodbury, Newton, Paterson, Belvidere, Mt. Holly, Bridgeton, Hackensack, Toms River, Caldwell and Trenton. The interest at these schools was excellent, and the total attendance was 1,367. Five hours of lecture and demonstration were given the eight Horticultural Course students at Rutgers College; four lectures were given to Short Course students at the College Farm, with an attendance at 142, and one lecture was given at a farmers' institute at Wyckoff, with 35 present. At the Get-Together Day at Franklin in May a demonstration of manipulating bees was given before twelve interested farmers.

Under the management of the New Jersey Beekeepers' Association four field demonstrations have been held at the following places: New Vernon in July, 1919; New Lisbon, September, 1919; White Horse, April, 1920; and Shiloh, June, 1920. The attendance at these meetings was 176. This Association also held a two-day convention at Trenton during "Agricultural Week." The attendance at the four sessions

was 230. The writer still serves as secretary of this organization, which has enjoyed a splendid growth the past year and now numbers 462 paid-up members.

NEW PROBLEMS

Much study has been given to the disorder of honey bees which has resulted in the death of hundreds of colonies of bees, principally in Monmouth County. The specific cause of the trouble and the remedy therefor have not been definitely determined. The studies made, however, lead to the conclusion that the trouble is not infectious. This makes it possible to again use depopulated hives with the assurance that the disorder will not reappear through this channel.

Growers of cucumbers under glass find it impractical to produce this crop without the aid of honeybees as pollinators. The Seabrook Farms, Bridgeton, use twelve colonies of bees on their six and one-fifth acre cucumber greenhouses for this purpose, and heretofore the colonies have perished by the end of the season. A study of this, and also the College Farm cucumber greenhouse, has resulted in devising a plan whereby the bees perfectly pollinate the cucumbers and are also kept alive and prosperous. This plan is to place the colony of bees on the outside of the cucumber greenhouse about five inches from an opening four inches high by the width of the glass made in one of the side panes. The hive body is then pushed forward two inches on the bottom board which provides an easily accessible back entrance for the bees, and most important of all an opening is made in the four corners of the roof near the eaves to allow bees which become "trapped" to escape and return to the hive via the outside route. This opening as used was about 6 by 12 inches.

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