

STATE OF NEW JERSEY
DEPARTMENT OF AGRICULTURE

WILLIAM B. DURYEE, SECRETARY



Fifteenth Annual Report

of the

New Jersey
State Department of Agriculture

July 1, 1929–June 30, 1930

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Trenton, N. J., October, 1930



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STATE OF NEW JERSEY
DEPARTMENT OF AGRICULTURE

WILLIAM B. DURYEE, *Secretary*

Trenton

November 3, 1930.

*To the Senate and General Assembly of
the State of New Jersey:*

I have the honor to transmit on behalf of the State Board of Agriculture the Fifteenth Annual Report of the New Jersey Department of Agriculture for the fiscal year ended June 30, 1930.

Respectfully,

W. B. Duryee
Secretary for Agriculture

Fifteenth Annual Report

Report of the Secretary

AGRICULTURE IN NEW JERSEY

New Jersey ranks second among the states of the nation in **density** of population, having an average of 536 persons per square mile. This great density of population has a direct agricultural significance in that there are four million consumers in our own state for all the food that can be produced on New Jersey farms.

The agriculture of the state is becoming more intensive with each passing year. The production of dairy products, poultry and eggs and fruits and vegetables is rapidly increasing and better methods of distributing these produces are being established. Recognition is being given as never before to the desirability of producing, assembling and distributing food products to the people of this commonwealth. There being no artificial boundaries, such as have been adopted nationally through tariffs, the producer of New Jersey is in competition with producers of practically every other state in the Union who see the opportunity of supplying this densely populated area with food products.

Before giving the detailed results of the department's operations for the fiscal year ending June 30, 1930, a review should be given of agriculture in New Jersey during the past season. For the second successive year, dry weather had an effect upon agricultural output and prices were affected by reduced purchasing power and the general economic depression. The following table shows concisely the estimated acreage, production and farm prices in New Jersey on September 1, 1930, as compared with the final estimate of 1929 and the average for the five years 1924 to 1928.

MEASURING PROGRESS DURING FIVE YEARS

Annual reports give a record of progress from year to year, but a study covering a longer period of time shows much more clearly the trends in agriculture and the increases in the volume of work carried out by the department.

DISEASE CONTROL

Bovine tuberculosis.—In the field of tuberculosis eradication we find that there were 2,995 herds under supervision for the control of this disease in 1925 and 9,818 herds in 1930, an increase of about 228 per

cent. The total number of animals under supervision increased from 39,312 to 92,221. Five years ago there were but 1,038 herds fully accredited as being free from tuberculosis, while in 1930 there were 6,046, an increase of practically 600 per cent.

The number of tuberculin reactors for which indemnity was paid totaled 2,908 in 1925 and 4,539 in 1930. The average state indemnity five years ago was \$24.58 and in 1930 it was \$65.66, while the average total amount received was \$70.27 per head in 1925 and \$137.27 in 1930. The increase in the state indemnity developed in part through the increased value of cattle and the consequent larger appraisal value, but it is principally due to an act of the Legislature passed in 1929, which substantially increased the amount of state indemnification to owners of reactors.

Contagious abortion.—Looking back five years in the problem of contagious abortion control, we find that, while the disease was generally prevalent in 1925, no constructive work on a state basis was being done to control it. In 1926, the Legislature passed an enabling act permitting the department to develop cooperative relations with owners for the testing of cattle in an effort to prevent the spread of this disease and to eradicate it from herds where the owners were desirous of doing so. The work began in 1927 and since that time 31,944 cattle have been tested through blood samples. Today there are nine herds in the state that are fully accredited as being free from the disease and a total of 6,558 head of cattle under supervision. The percentage of reactors since 1927 in these herds has averaged 12.77.

Poultry diseases.—There were no organized activities for the control of poultry diseases in 1925. Last year, however, the department took over the work in the control of pullorum disease and fowl pox. The total number of birds under supervision for the control of these two diseases, which are serious handicaps to poultry producers, is 301,608.

Poultry inspection.—In 1925 there was no provision for the inspection of poultry coming into New Jersey for distribution and consumption. One result of this lack of control was a serious outbreak of European fowl pox, which originated in a car of poultry from the West and became epidemic on New Jersey farms through the sale of poultry to flock owners in the northern part of the state. The passage of an act by the Legislature that year made it possible for the department to carry out inspection work at New Jersey railroad terminals the following year. The work has been continued effectively since that time. The total number of cars of poultry inspected since the

ERRATUM

(The following table should be inserted between pages 8 and 9 of the Fifteenth Annual Report of the New Jersey State Department of Agriculture)

ACREAGE, PRODUCTION AND FARM PRICES OF FARM PRODUCTS IN NEW JERSEY AS OF SEPTEMBER 1, 1930 AS COMPARED WITH THE FINAL ESTIMATE OF 1929 AND THE FIVE-YEAR AVERAGE, 1924-1928

	<i>Acreage</i>			<i>Production</i>			<i>Prices</i>		
	<i>1930 *</i>	<i>1929</i>	<i>1924-28 Average</i>	<i>1930 *</i>	<i>1929</i>	<i>1924-28 Average</i>	<i>1930 *</i>	<i>1929</i>	<i>1924-28 Average</i>
All field corn (bushels)	187,000	183,000	188,000	6,545,000	6,588,000	7,951,000	\$1.01	\$1.01	\$0.90
Wheat (bushels)	64,000	62,000	58,000	1,536,000	1,178,000	1,215,000	0.90	1.23	1.36
Oats (bushels)	54,000	47,000	49,000	1,944,000	1,410,000	1,571,000	0.54	0.57	0.55
White potatoes (bushels)	51,000	50,000	57,000	10,200,000	6,032,000	8,225,000	1.17	1.60	1.22
Sweet potatoes (bushels)	16,000	15,000	16,000	2,016,000	2,100,000	2,100,000	1.97	1.40	1.51
Hay, tame (tons)	237,000	242,000	255,000	337,000	362,000	437,000	19.33	18.60	18.28
Apples, total (bushels) .....	.....	.....	.....	3,713,000	1,880,000	3,151,000	0.95	1.75	1.20
Peaches (bushels) .....	.....	.....	.....	1,820,000	2,600,000	2,234,000	1.91	1.15	1.38
Tomatoes for manufacture (tons) ...	40,000	33,000	31,000	212,000	224,400	158,500	18.00	19.00	18.85
Tomatoes for market (bushels)	11,850	11,850	12,380	2,157,000	2,429,000	2,711,000	0.80	1.13	1.20
Sweet corn (100 ears)	23,000	22,000	20,000	1,253,000	990,000	1,138,700	1.00	2.08	1.84
Peppers (bushels)	8,400	7,800	7,100	1,932,000	1,404,000	1,809,000	0.93	0.65	0.78
Snap beans (bushels)	14,000	13,200	11,000	1,557,000	1,386,000	1,359,000	0.80	1.27	1.35
Lima beans (bushels)	2,900	3,000	3,000	206,000	225,000	253,000	2.64	1.45	2.08
Strawberries (32 qt. crates)	6,000	6,300	6,200	306,000	372,000	378,000	4.96	3.20	3.96
Asparagus (2 doz. bunches)	10,000	10,500	9,600	440,000	430,000	362,000	3.10	5.00	5.83
Cabbage (bushels)	9,000	7,500	5,900	1,890,000	1,500,000	1,523,000	0.51	0.70	0.72
Onions (bushels)	2,900	2,600	2,700	638,000	650,000	628,000	1.20	1.35	1.30
Milk (per 100 pounds) .....	.....	.....	.....	.....	.....	.....	2.60	2.96	2.66
Eggs (per dozen) .....	.....	.....	.....	.....	.....	.....	0.35	0.43	0.43

* Average to September 1, only.

work began is 39,200, with approximately 4,000 birds to each car, making a total of more than 150,000,000 birds. Since this inspection has been in force, there has been no serious outbreak of poultry diseases in the state and the quality of poultry at western terminals has been more carefully selected with a consequent better grade of birds coming to New Jersey receiving points.

MARKETING ACTIVITIES

The operations of the Bureau of Markets and the services rendered in this field have been almost completely reorganized during the past five years to meet changing conditions.

Market news.—Definite information on the production and marketing of crops in competing areas, as well as in New Jersey, has been compiled and sent to a large mailing list of producers who are primarily interested in individual crops. A review of the prices of practically all commodities has been developed and issued as another activity under the general heading of "market information." Cooperation has been established with the Bureau of Agricultural Economics of the United States Department of Agriculture and with the departments of agriculture in New York and Pennsylvania. Special reports are prepared and issued upon request and these have helped materially in the more efficient distribution of food products to New Jersey consumers. Headquarters for information on potato shipments have been established at Hightstown, the center of the potato shipping district. This information service has proved of great value to potato growers during the season in which this crop is shipped from New Jersey to all parts of the country.

Establishment of grades.—An outstanding development has been the establishment of grades for practically all fruits and vegetables. Handbooks describing these grades have been distributed to producers. These commodity grades have been prepared on the basis of federal grades to assure uniformity, so far as that is possible, and inspections at shipping points based upon these standards have resulted in a more stabilized distribution system and have established confidence between producer and buyer since each understands the terminology of the grades which have been set up.

Poultry certification.—Beginning in 1925, a certification program for poultry was started and a record of performance project organized which has since been used as a model in a number of other states. This

work has grown from 48,000 birds in four counties in 1925 to 155,000 birds in 19 counties in the fiscal year just ended.

Auction markets.—A notable achievement of the past five years is recorded in the establishment of auction markets where producers can bring their products to a central point and where buyers may purchase them on the open market. While very little had been accomplished along this line in 1925, the volume of business last year on six fruit and produce markets with which the department cooperates totaled more than two million dollars.

Aid has been given in the setting up and operation of two auction markets for New Jersey eggs during the past year. These have attracted state-wide attention and the results attained have been so satisfactory as to insure the further development of this project.

Milk marketing.—Under the general heading of "milk marketing," definite progress has been attained, resulting in securing outlets for milk produced on New Jersey farms, both within the state and in large consuming centers nearby.

STATISTICAL AND INSPECTION ACTIVITIES

The statistical and inspection work of the department includes the collection of data regarding a large number of agricultural enterprises and the carrying of inspection services to areas and agricultural industries that are under federal quarantine.

Japanese beetle control.—Progress in developing methods of control of the Japanese beetle in the last five years was outstanding. During that period, soil treatments were perfected by the use of carbon-disulphide and arsenate of lead, which have proved exceedingly effective against the Japanese beetle grubs in lawns and other grasslands.

Satisfactory spraying treatments have been devised for nearly all fruit crops. A new spray with remarkable adhesive qualities has been devised known as lead oleate-coated arsenate of lead for use as a protection against the depredations of the beetles. Traps have been greatly improved in all details and they are used throughout the infested territory.

A large number of different types of parasites have been introduced from the homelands of the Japanese beetle and two of these, the center fly and the tiphia wasp, have become well established. Colonies of these are now present throughout the state. Satisfactory inspection methods have been devised. They enable hay and straw shippers and

berry growers to move products out of the area with a minimum amount of inconvenience and cost.

With the development of effective means of control by spraying and by trapping, a definite program of suppression has been made possible. This project is carried on in cooperation with municipalities and it is now proposed to expand the work on a state-wide basis so that the heavily infested areas may have relief from the destruction of the beetle during the active feeding season.

Asiatic beetle quarantine.—During the five-year period a quarantine was established on account of the Asiatic beetle. Partly as a result of protests from the department and interested individuals, this quarantine was removed in 1929.

Seed certification.—The certification of white potatoes was continued over the five-year period and resulted in establishing a high standard and reputation for New Jersey seed potatoes. Certification also was carried out with tomatoes and the acreage entered increased from 327 in 1925 to 743 in 1930, and the number of growers increased in the same period from 40 to 68.

Gipsy moth campaign.—The campaign against the gipsy moth was continued with unabated vigor during the five-year period. In 1925 nine colonies of 69 egg clusters were found and in 1930 no infestations of any kind were found throughout the area. As a result, the counties and townships under quarantine have been reduced in number from year to year as has the appropriation needed for this work. Five years ago the appropriation for gipsy moth eradication was \$66,000 and in 1930, \$33,700. This project, carried out in cooperation with the federal department of agriculture, demonstrated for the first time the possibility of exterminating an insect of this type from an infested area within a state.

Nursery inspection.—The expansion of the nursery inspection work is shown by the fact that five years ago there were 267 nurseries inspected and certified and 609 in 1930. The number of cases of stock entering New Jersey from other states totaled 210 five years ago and has increased to 890.

In 1925 there was no federal quarantine requiring the inspection of narcissus bulbs on account of the bulb fly. As a result of a federal quarantine, more than 2,500,000 bulbs are now certified each year in New Jersey.

Statistical information.—A contribution to the available knowledge of agriculture has been made through the publication of the statistical handbook of New Jersey agriculture. This publication is a complete compendium of information pertaining to the past history and present developments in agriculture in all fields.

Fact-finding surveys.—Significant contributions have been made to agriculture through the making of fact-finding surveys. These do not partake of the nature of research but rather consist of the assembling of facts relating to the project under consideration in order that intelligent action may be taken in the light of accurate knowledge. During the past five years these fact-finding surveys have been made and reported in print on such subjects as shipping seasons; a census of peach and apple trees; rural electrification; motor truck transportation of eggs; the flight of insects; farm taxation; population, industry and agriculture; auto truck receipts of fruits and vegetables at Newark; facts on the peach industry; facts on the potato industry; facts on the poultry industry; methods of tomato marketing; a compendium of municipal milk ordinances; costs of beekeeping; principles of cooperation; food consumption in New Jersey; facts about the dairy industry; the operation of federal land banks; Japanese beetle quarantine costs.

Crop reports.—Crop reports, enlarged in scope and usefulness and containing special timely articles on agricultural topics, were continued each year during the five-year period.

Bee work.—Approximately 3,600 colonies of bees were inspected in 1925 as compared with 6,000 colonies in 1930. At the earlier period, European foulbrood was a serious menace to this industry, but at the present time the disease has been practically eradicated as a result of continued inspections and the application of definite control measures.

LICENSING AND BONDING

In 1925 there were 125 milk dealers licensed, with none bonded. On June 30, 1930, there were 237 milk dealers licensed and 144 bonds, totaling nearly \$500,000 filed.

The 1930 Legislature, through the passage of chapter 93, enacted a statute requiring the licensing and bonding of all commission merchants, dealers and buyers of perishable agricultural commodities. This law was made effective July 1, 1930. As a matter of public interest it should be recorded that at the time this report is written

there are 379 dealers licensed and the bonds filed with the department total \$1,137,000.

FRELINGHUYSEN FUND

The Frelinghuysen Fund, established in 1921, through the interest in agriculture of Hon. Joseph S. Frelinghuysen, then president of the State Board of Agriculture, has proved its usefulness through the great increase in interest in the breeding of purebred cattle, hogs and poultry throughout the state. Since 1925 there have been 551 loans made, totaling \$40,766.45. Progress has been made in securing stability of the fund through increased interest on the part of county club agents, through the filing of reports by local banks on the reputation for responsibility of the applicants, and especially through the approval of each individual loan by the executive committee of the various county boards of agriculture.

GENERAL ACTIVITIES

Through the initiative of the State Board of Agriculture and the personnel of the department, significant contributions have been made to agriculture in many fields.

Dairy industry improvement.—The New Jersey Milk Conference Board was organized three years ago. Serving on it are representatives of the producers, distributors, health officers, the College of Agriculture and other agencies. One year ago another step was taken toward improvement of the dairy industry in the state through the organization of the New Jersey State Dairy Committee, which is composed of a representative from each dairy county and each dairy breed association. This group also serves as an advisory board to the department on dairy matters.

As a result of coordinating the ideas of all those interested in this important industry in the state, definite progress has been made in many fields. One outstanding contribution has been the drafting of a code providing for grades of milk to be in universal use throughout the state. Two of these grades are confined to production within the state and surrounded by such safeguards as will assure the consumers a supply of milk of high standards of purity and safety.

The State Dairy Committee especially has served as a clearing house of information on topics relating to dairying with which the department is concerned and, through the medium of this organization, information along these lines has been carried to the counties and organizations which are represented.

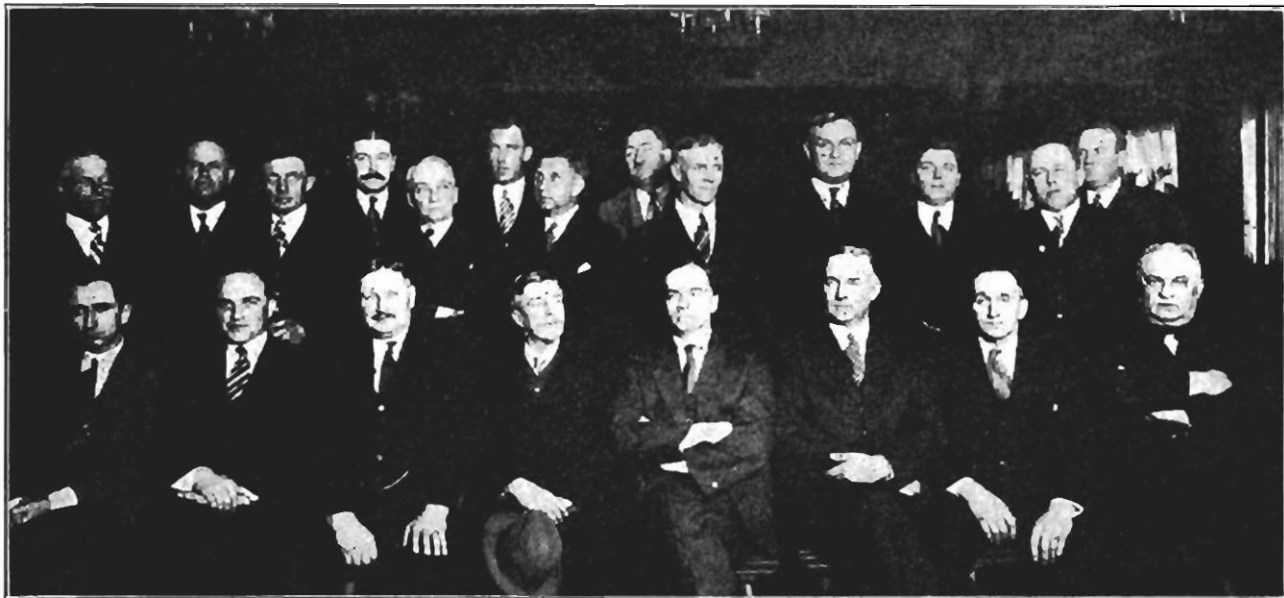


FIG. 2

The State Dairy Committee

Rural community improvement.—The spirit of progressiveness in a rural community is of greater importance to farmers and their families than the activities of any larger governing unit. Through electrification of our rural communities, through studies covering functions and activities of township committees, and through studies of rural churches as community centers, the department has made contribution to the strengthening of rural municipalities throughout the state.

In 1927, representatives of the electric light and power companies in the state were invited to a joint conference with representatives of farm organizations for the purpose of determining how cooperation between these agencies might be brought about for the betterment of country districts. As a result of this conference, the New Jersey Joint Rural Electrification Committee was organized. This committee is composed of representatives of the department, the State Grange, the State Farm Bureau, the College of Agriculture and the following utility companies: Public Service Electric and Gas Company, Jersey Central Power and Light Company, Atlantic City Electric Company, New Jersey Power and Light Company, Utilities Power and Light Company, and Eastern New Jersey Power and Light Company.

The companies financed the employment of an electrical engineer who is situated at the New Jersey Agricultural College and, through an executive committee representing both sides, activities in this field have greatly developed. It is impossible to state definitely the number of additional miles of wire that have been strung through the state as a result of this work, but the representatives of the power companies state that the impetus given to this project has been very great through the formation of this committee. Regular meetings are being held in Trenton. Papers covering the need of the rural communities in New Jersey and the functioning of the companies in meeting the need are presented at these meetings.

A fact-finding study of township government has been proceeding for the past few months, undertaken with the idea of collecting pertinent information on all phases of township government, including rural roads, education, public health, policing and lighting, all studied from the standpoint of application to rural communities. This survey, when completed, will be published and outstanding examples of efficient township government will be cited as a means of acquainting other municipal bodies with the general facts of successful township administration. Since the tax burden resting upon the rural people is largely of local origin, this study is of great economic importance.

Surveys are also being made of large scale farming operations in an endeavor to secure reliable data relating to the principles that must underlie success in this growing field.

A township road improvement committee composed of representatives of the State Highway Department, the United States Department of Agriculture, the Association of Boards of Freeholders, township committeemen, the State Federation of County Boards of Agriculture and the State Grange was organized. The conferences of this committee have resulted in a greater appreciation of the need for township road improvement and definite progress in this important field has resulted.

There are more than 500 rural churches serving the rural communities of New Jersey. Each of these can serve not only as an inspiration along religious lines, but also has potentialities for becoming a community center, partly through coordination with established agricultural agencies. Sponsored by a group of leading rural ministers and specialists in the field of religious education, a survey of these churches has been undertaken by the department, through a questionnaire. The results will be published as soon as the returns can be analyzed.

These four activities complete a program looking toward rural betterment. Continuing efforts will be made to bring the results of this work into more intimate contact with those who can be benefited by them.

Migratory labor survey.—Due to the agitation in regard to migratory child labor on farms in the state, it was considered advisable to get the facts in connection with this problem. The department has had an important part in this endeavor, working in cooperation with other departments of the state government concerned. With the completion of this study, an accurate picture of the migratory child labor situation will be available in a publication of this department.

Department functioning.—An investigation of the department was made during the fiscal year by the National Institute of Public Administration. Some suggestions were made regarding the department set-up, but after thorough study no criticism was made of the functioning of the department nor of the activities in which it was engaged.

The investigation brought out for us the need of a simplified accounting system and this system was developed in cooperation with the Institute and is now in effect. This voluntary action in meeting the Institute's suggestions has resulted in securing a much better picture of the daily activities of the department and a method of measuring results for money expended. The cost of keeping these records has also been reduced as compared with the previous system.

Organization contacts.—During the period described, contacts have been made and strengthened with state and county organizations which we believe have been mutually helpful. The institutions and organizations with which cooperative relations have been established or maintained include the College of Agriculture and Experiment Station, the state departments of Conservation and Development, Health, Highway, Institutions and Agencies, Labor, and Police, the State Farm Bureau, the State Grange, civic clubs, the county boards of agriculture, the various commodity organizations, the State Chamber of Commerce, the State Bankers' Association, and the New Jersey Electric Light Association. In many cases definite cooperative projects have been undertaken with the above and other agencies, resulting in services to the people of the state that would not otherwise have been possible.

Quarantine costs.—A study of the costs of quarantines has been made with the idea of calling attention to the economic factors in the establishment of federal quarantines. Under the present system, quarantines may be established by the secretary of the United States Department of Agriculture and enforced by the United States Plant Quarantine and Control Administration. National legislation has given this authority to federal officers and provides that whenever such national quarantines are in effect the states are to refrain from quarantining against each other in view of the national regulations.

A great system of quarantines has been developed over the past few years throughout the country and the burdens upon the taxpayers and the inconvenience and costs to hundreds of thousands of individuals have been heavy. We have been urging for more than a year the establishment of a federal commission to study national quarantines with a view to extending their value and to giving greater consideration to economic factors that are necessarily involved. Since these quarantines are costing the taxpayers of the United States approximately \$7,000,000 annually, not to speak of the restraint in trade and individual costs which are entailed, it would seem that a check-up by an impartial body would be a logical procedure at this time. While there is reluctance on the part of the federal authorities to approve such a study, its timeliness and need are reflected in the opinions of individuals and organizations throughout the country. The department proposes to continue to stress the importance of analyzing the trends in quarantines and their costs until some tangible results in this field are achieved.

Disseminating information.—Systematic work was carried on by the department in the year in disseminating information of timely

value and interest on agricultural subjects and on the work of the department. The principal media used in reaching the public, both producing and consuming, included newspaper articles, radio talks, talks to comparatively small groups, exhibits at fairs and showings of the department's motion picture, "Aiding New Jersey Agriculture." An important phase of the work was the distribution of newspaper articles designed to inform consumers of the qualities of various New Jersey agricultural products and, thus, to promote the sale of those products. In addition, publicity was given to various projects of the department with the object of assisting in their success.

Important in bringing agricultural subjects to the attention of the public were the radio talks, 10 of which were broadcast from Station WOR, Monday afternoons in April, May and June, under the auspices of the Department of Agriculture. Nine of the talks were given by representatives of the department and the other was given by a prominent New Jersey horticulturist. They served to point out the magnitude of the state's agricultural resources and opportunities, to explain the work of the department, and to bring various New Jersey agricultural products to the attention of consumers.

Agricultural Week.—Agricultural Week, held each January in Trenton, has grown in attendance and in importance as a contribution to the agriculture of the state. The high calibre of the programs of the cooperating organizations and the contributions of speakers of national prominence at the convention, together with the splendid exhibits of agricultural products and mechanical equipment, have made this week the outstanding agricultural event of the year in New Jersey. Its value is reflected through increasing attendance and through the need for additional days in which programs can be presented. Rural women have become greatly interested in the programs prepared for them by a committee of women representing the various farm organizations and the younger element of the rural population is attracted especially by the spelling bee open to representatives of granges throughout the state.

In thus briefly reviewing some of the high points of the department's operations during the past five years, recognition should be given to those within the department who have made progress possible by their earnest efforts, and to those outside the department who cooperated with it. It is a pleasure to record the aid given by the Governor of the State, by the Legislature and by cooperating agencies of nearly every type who have given unstintedly of their interest and time to make possible this report of progress.

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It should be pointed out that the additional projects and services undertaken by the department have been made possible through the cooperation of the personnel. The increase in the number of employees has not been in proportion to the increase in the work undertaken. Willingness to assume additional duties and the very evident spirit of service in the department have made possible the broadening of the department's activities in many valuable fields. A policy of greatest usefulness to the state has been fostered by the State Board of Agriculture and we are looking ahead toward the accomplishment of this aim to a greater degree than has been possible in the past.

Analysis of the work over the past five years brings up certain points of inability to cope with problems that have arisen in some minor respects and it is planned to correct these weaknesses in the program for the future.

NEEDS OF AGRICULTURE

In the last annual report, certain needs were outlined and we believe we are drawing nearer to filling some of these requirements for better agriculture in New Jersey. One of the needs mentioned was more accurate data pertaining to the greatly diversified type of agriculture which we now have in the state. An item will be included in the budget for the coming fiscal year to make it possible for the department to conduct an annual agricultural census on a sample basis throughout the state. The taxation problem continues to press heavily upon agriculture and the State Board of Agriculture has appointed a special committee of its members to consult with experts in this field, with the idea of formulating a policy that will bring about some relief for agricultural interests and that may fit into a general state program looking toward tax revision.

Mention has been made of the work that has been done toward establishing a better supply of milk from New Jersey farms. This is a matter of great importance to both the consumer and the producer. A great deal has been accomplished along this line during the past fiscal year and we are unquestionably headed toward the development of a more satisfactory supply and better markets for the milk produced on our farms.

Accompanying this production of a better supply of milk is the need for tuberculosis eradication. While sixty per cent of the cattle in the state are now under supervision and free from this disease, the remaining forty per cent constitutes a grave problem. With the continued public pressure for milk from tuberculosis-free cows, whether it be

pasteurized or not, it is becoming increasingly apparent that all the cattle in the state that are producing milk for the market must be tested. The department is only able to do this work as funds are provided for carrying out the tests and for indemnifying owners of reactors. It is our hope that the Legislature may continue to supply the funds essential for the completion of the tuberculosis eradication program.

Clarification of the activities of the agricultural agencies in the state has long been needed and steps have now been taken to bring about this desirable result. A committee on administrative policy of the State Board of Agriculture is holding conferences with a similar committee representing the Board of Managers of the Experiment Station looking toward the definition of the activities in the whole agricultural field as covered by the state-supported agencies. It is our belief that better results will accrue from this effort than through attempts by legislation to more clearly define the responsibilities of each organization.

PUBLICATIONS

The following circulars and other publications were issued in the year :

Circ. No. 169—Results of the Ninth Year's Work Against the Gipsy Moth in New Jersey.

Circ. No. 170—White Pine Blister Rust in New Jersey.

Circ. No. 171—Official Proceedings of the Fifteenth Annual State Agricultural Convention.

Circ. No. 172—New Jersey Nurserymen and Dealers Certified, 1929-1930.

Circ. No. 173—Receipts of Selected Perishable Food Commodities in the New Jersey Sector of the New York Metropolitan Area, 1928. Also Motor Truck Receipts at Newark, N. J., May 1, 1929-December 31, 1929.

Circ. No. 174—New Jersey Plan of Poultry Standardization and Accreditation, 1929-1930.

Circ. No. 175—County Boards of Agriculture, Granges and State Agricultural Organizations for 1930.

Circ. No. 176—Japanese Beetle Spraying Recommendations for the Protection of Ornamental Trees and Shurbs and Non-Commercial Fruit Holdings.

Circ. No. 177—An Annotated Bibliography of the White Pine Weevil, *Pissodes-strobi* (Peck) for White Pine Blister Rust Workers and Others.

Circ. No. 178—The Asiatic Beetles in New Jersey.

Circ. No. 179—Population and Food Supply of New Jersey.

Circ. No. 180—Facts Pertaining to the Japanese Beetle.

Circ. No. 181—New Jersey Prices of Hired Farm Labor, Feedstuffs and Fertilizer Materials and Their Index Numbers.

Circ. No. 182—A Study of the Economic Costs of Quarantines in New Jersey.

Circ. No. 183—Requirements and Rules for the Inspection and Certification of New Jersey Second-Crop Seed Potatoes, as Adopted by the New Jersey State Potato Association and the New Jersey State Department of Agriculture for 1930.

Circ. No. 184—Department of Agriculture Laws.

Circ. No. 185—Marketing New Jersey Fruits and Vegetables.

Circ. No. 186—A Survey of Roadside Markets.

Circ. No. 187—Knowing Market Conditions Before We Sell.

Circ. No. 188—Fumigation of Fresh Fruits with Carbon Di-Sulphide for the Destruction of Adult Japanese Beetles.

Official Grades for the Standardization of New Jersey Vegetables.

Official Grades for the Standardization of New Jersey Berries.

Official Grades for the Standardization of New Jersey Apples and Peaches.

Twelve issues of monthly news publication, "State Department Service."

Report of the Bureau of Animal Industry

TUBERCULOSIS ERADICATION

The progress made in tuberculosis control and eradication in the fiscal year ending June 30, 1930, was due to the activities of a number of agencies. First, the City of Philadelphia made operative on May 1, 1930, an ordinance requiring that all herds supplying milk for the city must be negative to the tuberculin test. Second, practically all of the milk receiving companies operating in southern New Jersey require all herds supplying their stations to be maintained under state and federal cooperative supervision.

The cooperative plan adopted by the department is to test herds annually on the individual herd plan. Additions to herds are retested within 60 or 90 days. All animals entering the state must meet the following requirements and, by their so doing, it is reasonably certain that the standard of health of the herds now under supervision will be maintained:

"Dairy and breeding cattle consigned to New Jersey points must have been previously tuberculin tested in a herd that had passed at least one negative tuberculin test made under State, Federal or Government supervision and this fact certified to by the State Veterinarian, Federal representative, or Veterinary Director General of the state or foreign country in which the cattle originate by the issuance of Federal T. E. Form 22, or similar form, giving the date of previous test under supervision and the number of animals tested—such test to include the particular animal or animals to be consigned. If the herd is operating under the individual herd plan, such previous test must have been made within one year of the date of shipment; if from a herd tested in a modified accredited area, previous test shall have been made within three years of the date of shipment.

"If each animal is found to comply with the requirements as stated in the preceding paragraph, they are eligible for shipment *direct* from point of origin to New Jersey points; providing they are tested by the subcutaneous method by an accredited veterinarian within thirty days of the date of shipment, such test for shipment, however, shall not be made within sixty days of the date of the test made under supervision, as outlined in the previous paragraph.

"NO OTHER CATTLE ARE ELIGIBLE FOR ENTRY INTO NEW JERSEY."

The Legislature of 1929 modified the law relative to the payment of indemnities which, on the basis of appraised valuation as established, now permits the owner to receive practically full valuation for each animal condemned for being affected with tuberculosis. The state is required to pay increased indemnities, raising the average amount

from \$30.77 per head for last fiscal year to \$65.53 for this fiscal year. The increase is 112.97 per cent.

The annual appropriation made for the payment of indemnities for the fiscal year was \$200,000. However, this amount was insufficient and, later, an additional or supplemental appropriation of \$100,000 was granted to indemnify owners for their losses. Many applications for tuberculin testing were received and, because of the high percentage of reactors that were found, the funds were not sufficient to complete all of the work requested. The dairymen received, in addition to the state indemnity, the amount received for salvage and the allotment made by the federal government.

The appropriation for the coming fiscal year for the payment of indemnities is \$200,000. Already the bureau has signed applications on file which will absorb practically all of this fund and, unless an additional amount is appropriated, this amount will not be sufficient to complete the year's work.

At the close of the year ending June 30, 1929, there were under supervision in New Jersey 9,323 herds of 82,209 animals. At the close of the year ending June 30, 1930, there were 9,818 herds of 92,221 animals under supervision. The increase amounted to 5.3 per cent in the number of herds and 12.17 per cent in the number of animals. In the past twelve-month period, the bureau tested 106,108 cattle, of which 5,689, or 5.36 per cent of the total number of animals tuberculin tested in herds under state and federal supervision, reacted.

In the year ending June, 1929, indemnities were paid for 3,358 reactors, 209 of which were purebreds and 3,149, grades. In the year ending June, 1930, indemnities were paid on 4,524 reactors, of which 281 were purebreds and 4,243 grades.

In the year ending June, 1929, the percentage of reactors on initial tests was 23.42. Of the 12,910 cattle tested, 3,024 reacted. In the year ending June, 1930, the percentage of reactors on initial tests amounted to 31.44. Of the 11,769 cattle tested, 3,701 reacted. The percentage of reactors among imported cattle added to herds under supervision in the former fiscal year was 5.10. Of the 6,368 cattle tested, 325 reacted. In the year ending June, 1930, 9,244 cattle were tested with 359, or 3.88 per cent, reacting.

Other tests include second or third retests of herds already under supervision. In the year ending June, 1929, 83,547 animals were tested. Of that number, 1,405, or 1.68 per cent, reacted. In the year ending June, 1930, 85,095 animals were tested and 1,629, or 1.91 per cent, reacted.

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Following is the total amount received by dairymen and breeders for 4,524 reactors condemned as a result of tuberculin testing in the year ending June, 1930.

Amount received for salvage of reactors	\$177,587.07
Amount paid by State of New Jersey in indemnity	296,468.03
Amount paid by the United States Government in indemnity.....	146,938.71
	<hr/>
Total	\$620,993.81

This is an average of \$137.27 per head.

INDEMNITIES PAID TO COUNTIES BY STATE, JULY 1, 1929, TO
JUNE 30, 1930

Atlantic	\$230.69
Bergen	6,308.78
Burlington	46,922.44
Camden	1,186.80
Cape May	1,131.85
Cumberland	5,696.08
Essex	489.90
Gloucester	2,146.34
Hudson	1,036.77
Hunterdon	29,529.79
Mercer	35,120.44
Middlesex	1,884.22
Monmouth	11,059.12
Morris	17,201.40
Ocean	699.17
Passaic	1,354.29
Salem	48,215.73
Somerset	8,747.51
Sussex	59,207.72
Union	949.62
Warren	17,349.37
	<hr/>
Total	\$296,468.03

This is an average of \$137.27 per head.

Following is a comparison of the average net proceeds received per head from the sale of reactors in the past five fiscal years :

1925-1926	1926-1927	1927-1928	1928-1929	1929-1930
\$26.05	\$32.10	\$45.43	\$50.14	\$39.24

The following summary indicates the amount of state indemnities paid for tuberculin test reactors in the five-year period 1925 to 1930:

Class of Cattle	1925-1926		1926-1927		1927-1928		1928-1929		1929-1930	
	No. of Animals	Amount Paid	No. of Animals	Amount Paid	No. of Animals	Amount Paid	No. of Animals	Amount Paid	No. of Animals	Amount Paid
Purebred	340	\$21,680.25	252	\$16,435.66	290	\$18,664.21	209	\$15,860.35	281	\$33,311.34
Grade	2,568	49,802.44	2,512	66,832.19	6,344	173,024.28	3,149	87,480.83	4,243	263,156.69
Total	2,908	\$71,482.69	2,764	\$83,267.85	6,634	\$191,688.49	3,358	\$103,341.18	4,524	\$296,468.03
<i>Average Indemnity Paid</i>										
Purebreds		63.76		65.22		64.35		75.89		118.55
Grades		19.39		26.60		27.27		27.78		62.02
Total P. B. & Grades		24.58		30.12		28.89		30.77		65.53

The following summary indicates the amount of salvage received by owners for tuberculin test reactors in the five-year period 1925 to 1930:

Class of Cattle	1925-1926		1926-1927		1927-1928		1928-1929		1929-1930	
	No. of Animals	Amount Paid	No. of Animals	Amount Paid	No. of Animals	Amount Paid	No. of Animals	Amount Paid	No. of Animals	Amount Paid
Purebred	340	\$10,787.34	252	\$9,988.62	290	\$15,783.23	209	\$12,331.98	281	\$14,381.30
Grade	2,568	62,064.50	2,512	78,752.08	6,344	285,661.04	3,149	151,624.00	4,243	163,205.77
Total	2,908	\$72,851.84	2,764	\$88,740.70	6,634	\$301,444.27	3,358	\$163,955.98	4,524	\$177,587.07
<i>Average Salvage Received</i>										
Purebreds		31.72		39.63		54.42		60.15		51.18
Grades		24.16		31.35		45.02		49.43		38.46
Total P. B. & Grades		25.05		32.10		45.43		50.10		39.24

Estimated Federal Indemnity received by owner	2,908	<u>\$60,000.00</u>	2,764	<u>\$55,000.00</u>	6,634	<u>\$116,000.00</u>	3,358	<u>\$81,767.30*</u>	4,524	<u>\$146,938.71*</u>
 TOTAL AMOUNT RECEIVED BY OWNER FOR REACTORS		\$204,334.53		\$227,008.55		\$609,132.76		\$349,064.46		\$620,993.81
 Average amount received per head by owner for reactors		70.27		82.13		91.82		103.10		137.27
Total number reactors appraised five-year period 1925-1930									20,188	
Total state indemnity paid, five-year period 1925 to 1930									\$746,248.24	
Total salvage received by owner, five-year period 1925 to 1930									804,579.86	
Total federal indemnity received by owner, five-year period 1925 to 1930									459,706.01	
 Total amount received by owners for 20,188 reactors, five-year period 1925 to 1930									<u>\$2,010,534.11</u>	
Average amount received per head by owner for reactors, five-year period 1925 to 1930									99.59	

* Actual amounts paid.

HERDS FULLY ACCREDITED AND UNDER SUPERVISION

State Institution Herds Fully Accredited

	<i>Purebred</i>	<i>Grade</i>	<i>Total</i>
N. J. Agricultural Experiment Station, New Brunswick	113	33	146
N. J. Manual Training and Industrial School, Bordentown ..	15	31	46
N. J. Reformatory, Rahway .....	..	31	31
N. J. State Prison, Leesburg	3	56	59
N. J. State Colony for Feeble Minded Males, New Lisbon ..	1	30	31
N. J. State Home for Boys, Jamesburg	3	73	76
N. J. State Hospital, Trenton Junction	15	225	240
N. J. State Hospital, Morris Plains .....	..	193	193
N. J. State Reformatory for Boys, Annandale	1	68	69
N. J. State Institution for Feeble Minded, Vineland	24	56	80
N. J. State Reformatory for Women, Clinton	1	27	28
N. J. Sanatorium for Tuberculosis, Glen Gardner	4	84	88
Totals	180	907	1,087

State Institution Herds Under Supervision

North Jersey Training School, Little Falls	1	39	40
N. J. State Village for Epileptics, Skillman	47	33	80
	48	72	120
Percentage of purebred animals in state institution herds	18.89		
Percentage of grade animals in state institution herds	81.11		

County Herds Fully Accredited

Camden County Almshouse, Grenloch .....	..	117	117
Cape May County Farm, Cape May Court House .....	..	12	12
Cumberland County Almshouse, Bridgeton	1	21	22
Morris County Almshouse, Morris Plains .....	..	15	15
Mercer County Workhouse, Lambertville	1	9	10
Warren County Farm, Oxford .....	..	33	33
Gloucester County Institution, Clarksboro .....	..	7	7
Burlington County Almshouse, New Lisbon	6	41	47
Totals	8	255	263

County Herds Under Supervision

Essex County Hospital, Cedar Grove	178	1	179
Totals	178	1	179
Percentage of purebred animals in county herds	42.08		
Percentage of grade animals in county herds	57.92		

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City Herds Fully Accredited

Newark City Boys' Home, Verona ..	12	12
Totals ..	12	12
Percentage of grade animals in city herds ..	100	

Township Herds Fully Accredited

Hopewell Township Farm, Pennington (Mercer County) ..	3	23	26
Raritan Township Farm, Flemington (Hunterdon County) ..	..	13	13
Totals ..	3	36	39
Percentage of purebred animals in township herds ..	7.70		
Percentage of grade animals in township herds ..	92.30		
Grand Totals ..	417	1,283	1,700
Percentage of purebred animals in state, county, city and township herds ..	24.53		
Percentage of grade animals in state, county, city and township herds ..	75.47		

Certified Dairies Fully Accredited

Walker-Gordon Laboratories, Juliustown ..	10	399	409
Woodbrook Farm, Metuchen ..	..	119	119
Raritan Valley Farms, Somerville ..	3	103	106
Totals ..	13	621	634

Certified Dairies Under Supervision

Noe Farms, Madison ..	..	175	175
Purity Farms, Pennington ..	..	460	460
Sheffield Farm, Pompton Plains ..	..	226	226
Walker-Gordon Laboratories, Plainsboro ..	43	1,644	1,687
Totals ..	43	2,505	2,548
Grand Totals ..	56	3,126	3,182
Percentage of purebred animals in certified dairies ..	1.76		
Percentage of grade animals in certified dairies ..	98.24		

The following chart gives the number of herds under supervision and those fully accredited by counties, together with the percentage of the number of cattle in each county under supervision as indicated by the 1925 Federal Census:

<i>County</i>	<i>Number of Herds Under Supervision</i>	<i>Herds Fully Accredited</i>	<i>Number of Cattle in County (1925 U. S. Census)</i>	<i>Number Cattle Under Supervision June 30, 1930</i>	<i>Percentage of Cattle Under Supervision (1925 U. S. Census)</i>
Atlantic	442	382	809	681	98.59
Bergen	141	13	2,806	2,232	79.54
Burlington ...	613	349	17,797	10,537	59.21
Camden	253	188	1,428	1,033	72.34
Cape May ...	287	247	1,072	1,090	98.92
Cumberland ..	1,183	825	6,981	5,705	81.72
Essex	29	8	3,565	1,736	48.70
Gloucester	886	672	5,875	4,001	68.10
Hudson	22	...	67	190	92.52
Hunterdon	1,006	507	18,002	9,728	54.04
Mercer	772	425	7,892	7,378	93.49
Middlesex	386	254	5,953	4,258	71.53
Monmouth ...	539	338	8,436	3,811	45.18
Morris	492	272	6,479	6,164	95.14
Ocean	295	211	1,197	1,032	86.22
Passaic	189	20	2,278	2,537	97.93
Salem	815	471	15,203	9,820	64.59
Somerset	390	236	8,592	4,598	53.51
Sussex	371	191	24,365	5,559	22.82
Union	23	8	2,494	1,840	73.78
Warren	684	429	14,898	8,291	55.65
Total	9,818	6,046	156,189	92,221	59.04
<i>Animals in herds under supervision</i>			<i>Animals in herds fully accredited</i>		
16,529 Purebred			10,666 Purebred		
75,692 Grade			39,448 Grade		
<hr/>			<hr/>		
92,221			50,114		

COMPARISON OF HERDS UNDER SUPERVISION AND THOSE FULLY ACCREDITED IN EACH COUNTY FOR THE PAST FIVE YEARS

	HERDS UNDER SUPERVISION					HERDS FULLY ACCREDITED				
	1925-1926	1926-1927	1927-1928	1928-1929	1929-1930	1925-1926	1926-1927	1927-1928	1928-1929	1929-1930
Atlantic	130	222	548	476	442	...	82	190	365	382
Bergen	33	48	128	160	141	5	6	11	16	13
Burlington	209	274	451	561	613	66	104	119	257	349
Camden	13	41	201	254	253	3	6	8	88	188
Cape May	95	349	438	335	287	19	71	205	274	247
Cumberland	174	227	910	1,150	1,183	75	101	110	506	825
Essex	40	35	49	38	29	4	7	8	11	8
Gloucester	133	259	922	974	886	68	82	92	577	672
Hudson .....	...	...	18	22	22	...	...	...	...	...
Hunterdon	248	337	530	864	1,006	105	168	199	368	507
Mercer	190	363	572	604	772	83	127	163	286	425
Middlesex	257	297	374	377	386	77	152	183	222	254
Monmouth	103	135	405	489	539	30	52	75	260	338
Morris	238	259	417	455	492	80	116	144	248	272
Ocean	49	70	263	293	295	9	27	29	148	211
Passaic	81	78	157	205	189	7	21	22	22	20
Salem	130	156	539	765	815	32	73	81	202	471
Somerset	198	215	320	360	390	108	142	141	194	236
Sussex	87	101	248	301	371	16	50	62	150	191
Union	24	21	27	29	23	1	8	10	10	8
Warren	563	587	662	611	684	250	368	369	418	429
	<u>2,995</u>	<u>4,074</u>	<u>8,179</u>	<u>9,323</u>	<u>9,818</u>	<u>1,038</u>	<u>1,763</u>	<u>2,221</u>	<u>4,622</u>	<u>6,046</u>
Purebred	10,758	11,574	13,257	14,977	16,529	6,307	7,686	8,551	9,649	10,666
Grade	28,380	34,400	53,594	67,232	75,692	11,090	14,682	19,146	30,223	39,448
Totals	<u>39,138</u>	<u>45,974</u>	<u>66,851</u>	<u>82,209</u>	<u>92,221</u>	<u>17,397</u>	<u>22,368</u>	<u>27,697</u>	<u>39,872</u>	<u>50,114</u>

COMPARISON OF THE NUMBER OF CATTLE UNDER SUPERVISION IN EACH COUNTY
FOR THE PAST FIVE YEARS

County	1925-1926		1926-1927		1927-1928		1928-1929		1929-1930	
	Number Under Supervision	Per Cent	Number Under Supervision	Per Cent	Number Under Supervision	Per Cent	Number Under Supervision	Per Cent	Number Under Supervision	Per Cent
Atlantic	232	24	376	39	852	99	725	98	681	98
Bergen	681	24	934	33	1,973	70	2,336	83	2,232	80
Burlington	4,314	24	5,461	31	7,652	43	9,256	52	10,537	59
Camden	156	11	278	19	724	51	972	68	1,033	72
Cape May	554	45	973	79	1,176	99	1,061	98	1,090	98
Cumberland	1,846	26	1,914	27	4,015	58	5,541	79	5,705	82
Essex	2,079	59	1,687	47	1,981	56	1,677	47	1,736	49
Gloucester	1,128	19	1,514	26	3,090	53	3,970	68	4,001	68
Hudson .....	....	..	....	..	186	92	271	93	190	93
Hunterdon	2,815	16	3,581	20	4,927	27	8,113	45	9,728	54
Mercer	2,900	37	4,117	52	5,354	68	6,152	78	7,378	93
Middlesex	2,699	45	3,303	55	4,039	68	4,326	73	4,258	72
Monmouth	1,201	14	1,354	16	2,675	32	3,138	37	3,811	45
Morris	3,436	53	3,698	57	4,851	75	5,388	83	6,164	95
Ocean	163	14	267	22	824	69	937	78	1,032	86
Passaic	1,525	70	1,559	72	2,302	97	2,769	97	2,537	97
Salem	1,422	90	2,036	13	4,604	30	8,354	55	9,820	65
Somerset	3,348	39	3,741	44	3,963	46	4,275	50	4,598	54
Sussex	1,524	6	1,776	7	3,001	12	4,135	17	5,559	23
Union	872	35	1,094	44	1,532	61	1,503	51	1,840	74
Warren	6,243	41	6,311	42	7,130	48	7,310	49	8,291	56
Totals	39,138	25	45,974	29	66,851	43	82,209	53	92,221	59

TOTAL PERCENTAGE OF INITIAL TESTS BY COUNTIES

July, 1929-June, 1930

County	Number Herds	Tested		Reacted		Percentage		Total Animals Tested	Total Animals Reacted	Total Per Cent of Reactors
		Purebred	Grade	Purebred	Grade	Purebred	Grade			
Atlantic	20	...	35	...	8	.....	22.86%	35	8	22.86%
Bergen	10	3	90	1	15	33.33%	16.67%	93	16	17.20%
Burlington	137	63	1,622	7	632	11.11%	38.96%	1,685	639	37.92%
Camden	47	1	71	1	9	100%	13.68%	72	10	13.89%
Cape May	16	...	21	...	1	.....	4.55%	21	1	4.76%
Cumberland	154	26	497	3	65	11.54%	13.08%	523	68	13%
Essex	4	...	7	...	...	.....	.....	7	...	.....
Gloucester	80	12	170	...	22	.....	12.94%	182	22	12.09%
Hudson .....	...	...	...	...	...	.....	.....	...	...	.....
Hunterdon	181	113	1,440	23	324	20.35%	22.5%	1,553	347	22.34%
Mercer	185	75	1,563	11	701	14.67%	44.85%	1,638	712	43.47%
Middlesex	25	3	84	1	12	33.33%	14.29%	87	13	14.94%
Monmouth	99	72	739	4	156	5.56%	21.11%	811	160	19.75%
Morris	68	231	570	10	169	4.52%	29.65%	801	179	22.35%
Ocean	34	2	76	...	3	.....	3.95%	78	3	3.85%
Passaic	3	...	37	...	...	.....	.....	37	...	.....
Salem	105	40	1,092	13	547	32.5%	50.09%	1,132	560	49.47%
Somerset	55	69	358	6	79	8.7%	22.07%	427	85	19.91%
Sussex	75	169	1,684	35	721	20.71%	42.81%	1,853	756	40.8%
Union	1	...	39	...	2	.....	5.13%	39	2	5.13%
Warren	75	136	559	9	111	6.62%	19.86%	695	120	17.27%
Total	1,374	1,015	10,754	124	3,577	12.22%	33.26%	11,769	3,701	31.44%

COMPARISON OF THE NUMBER OF CATTLE TESTED ON INITIAL TEST, NUMBER REACTORS RESULTING AND THE PERCENTAGE OF REACTION, BY COUNTIES, FROM JULY, 1925 TO JUNE, 1930

COUNTY	1925-1926			1926-1927			1927-1928			1928-1929			1929-1930			Totals 1925-1930		
	Number Cattle Tested	Number Reactors Found	Per Cent Reactors	Number Cattle Tested	Number Reactors Found	Per Cent Reactors	Number Cattle Tested	Number Reactors Found	Per Cent Reactors	Number Cattle Tested	Number Reactors Found	Per Cent Reactors	Number Cattle Tested	Number Reactors Found	Per Cent Reactors	Number Cattle Tested	Number Reactors Found	Per Cent Reactors
Atlantic	218	26	12.	247	76	31.	473	53	11.	78	2	3.	35	8	23.	1,051	165	16.
Bergen	10	..	..	187	78	42.	1,112	211	19.	350	24	7.	93	16	17.	1,752	329	19.
Burlington	979	295	30.	1,078	331	31.	1,629	704	43.	1,175	285	24.	1,685	639	38.	6,546	2,254	34.
Camden	61	12	20.	176	81	46.	374	49	13.	285	55	19.	72	10	14.	968	207	21.
Cape May	154	16	10.	150	59	39.	140	4	3.	24	..	..	21	1	5.	789	80	10.
Cumberland	220	55	25.	260	49	19.	2,470	420	17.	1,421	283	20.	523	68	13.	4,894	875	18.
Essex	398	36	9.	..	..	..	476	85	18.	75	1	1.	7	..	..	874	124	14.
Hancock	319	126	39.	737	248	34.	1,644	364	22.	577	210	36.	182	22	12.	3,459	970	28.
Hudson	..	..	..	..	..	..	277	91	33.	38	1	3.	..	..	..	315	92	29.
Hunterdon	444	136	31.	850	216	25.	1,843	386	21.	2,862	778	27.	1,553	347	22.	7,052	1,863	26.
Mercer	370	196	53.	1,413	453	32.	1,155	364	32.	450	69	15.	1,638	712	43.	5,226	1,794	34.
Middlesex	501	62	12.	181	55	30.	500	182	36.	180	12	7.	87	13	15.	1,449	274	19.
Monmouth	353	49	14.	332	87	26.	1,384	252	18.	531	55	10.	811	160	20.	3,413	603	18.
Morris	758	188	25.	167	25	15.	1,278	214	17.	358	7	2.	801	179	22.	3,362	613	18.
Ocean	9	3	33.	145	33	23.	608	124	20.	127	2	2.	78	3	4.	967	165	17.
Gloucester	112	43	38.	61	8	13.	858	101	12.	244	16	7.	37	..	..	1,312	168	13.
Gloucester	466	234	50.	588	200	34.	4,126	1,953	47.	2,437	1,000	41.	1,132	560	49.	8,749	3,947	45.
Somerset	426	119	28.	242	36	15.	484	101	21.	391	41	10.	427	85	20.	1,970	382	19.
Sussex	781	214	27.	239	110	46.	1,045	109	10.	916	142	16.	1,853	756	40.	4,834	1,331	27.
Union	43	8	19.	9	..	..	144	35	24.	29	6	21.	59	2	5.	264	51	19.
Warren	660	133	20.	262	49	19.	475	85	18.	362	35	10.	695	120	17.	2,454	422	17.
Total	7,394	1,951	26.	7,632	2,196	29.	21,995	5,837	27.	12,910	3,024	23.	11,769	3,701	31.	61,700	16,709	27.

ACCREDITED HERD WORK

Tested by N. J. B. A. I. Veterinarians	Initial					Additions					Other Tests				
	Tested		Reactors			Tested		Reactors			Tested		Reactors		
	Lots	Purebred	Grade	Purebred	Grade	Lots	Purebred	Grade	Purebred	Grade	Lots	Purebred	Grade	Purebred	Grade
1929—															
July	137	113	594	9	102	14	72	428	...	14	427	492	3,395	4	56
August	122	61	639	5	167	26	49	1,288	...	34	543	798	3,445	10	75
September	102	42	481	1	136	25	31	375	...	9	435	330	2,650	10	31
October	73	63	423	20	112	15	18	437	...	6	340	382	2,801	7	51
November	97	127	980	15	301	26	50	411	1	5	505	974	5,835	14	58
December	147	51	1,536	6	471	32	41	614	1	14	454	1,352	4,896	25	85
1930—															
January	161	127	1,794	30	777	34	21	457	1	26	492	999	3,689	14	82
February	99	40	659	12	169	24	22	340	2	22	540	1,356	6,784	16	84
March	25	3	102	..	9	56	45	1,298	5	70	730	1,529	6,381	20	59
April	123	38	922	3	367	57	42	685	...	28	693	940	6,233	26	183
May	124	69	960	11	291	30	64	654	...	12	715	2,426	5,697	59	224
June	56	210	276	2	50	17	39	387	2	17	617	888	5,267	54	133
Totals	1,266	944	9,366	114	2,952	356	494	7,374	12	257	6,491	12,466	57,073	259	1,121
Percentage of Re-	12.08	31.52	2.43	3.49	2.08	1.96
actors	29.74	3.42	1.98
Average Percentage..

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ACCREDITED HERD WORK
(Continued)

Inspected by U. S. B. A. I. Veterinarians	Initial				Additions					Other Tests					
	Tested		Reactors		Tested		Reactors			Tested		Reactors			
	Lots	Purebred	Grade	Purebred	Grade	Lots	Purebred	Grade	Purebred	Grade	Lots	Purebred	Grade	Purebred	Grade
19—															
July .....	...	...	...	...	...	9	73	27	...	...	6	3	81	...	...
August .....	...	...	...	...	...	9	..	21	...	...	12	62	72	...	...
September .....	...	...	...	...	...	1	..	3	...	...	5	178	71	...	...
October .....	...	...	...	...	...	7	61	21	...	...	4	93	64	5	2
November .....	...	...	...	...	...	7	38	16	...	...	7	76	87	...	...
December .....	...	...	...	...	...	7	..	31	...	...	6	286	22	2	...
190—															
January .....	...	...	...	...	...	2	..	7	...	...	1	1	55	...	...
February	1	..	4	...	...	5	..	16	...	...	9	195	101	...	1
March .....	...	...	...	...	...	5	3	24	...	...	13	168	157	...	...
April .....	...	...	...	...	...	5	57	3	...	...	10	539	91	...	...
May	1	..	3	...	...	2	43	1	...	...	..	..	..	...	...
June .....	...	...	...	...	...	7	2	26	...	...	13	221	160	...	1
Totals	2	..	7	...	...	66	277	196	...	11	86	1,822	961	7	4
Percentage of Reactors .....	...	...	...	...	...	..	...	...	..	5.61	...	...	...	.38	.42
Average Percentage..	...	...	...	...	...	..	...	...	..	2.33	...	...	...	...	.40

ACCREDITED HERD WORK
(Continued)

<i>Tested by Accredited Veterinarians</i>	<i>Initial</i>					<i>Additions</i>					<i>Other Tests</i>					
	<i>Tested</i>		<i>Reactors</i>		<i>Grade</i>	<i>Tested</i>		<i>Reactors</i>		<i>Grade</i>	<i>Tested</i>		<i>Reactors</i>		<i>Grade</i>	
<i>Lots</i>	<i>Purebred</i>	<i>Purebred</i>	<i>Grade</i>	<i>Purebred</i>		<i>Grade</i>	<i>Purebred</i>	<i>Grade</i>	<i>Purebred</i>		<i>Grade</i>	<i>Lots</i>	<i>Purebred</i>	<i>Purebred</i>		<i>Grade</i>
1929—																
July	4	2	62	...	35	2	1	20	...	1	86	126	526	...	5	
August	7	1	47	...	7	3	1	10	...	...	16	22	208	...	...
September	9	..	53	...	5	3	1	185	...	9	14	18	378	...	25	
October	4	2	34	...	2	1	..	97	...	10	24	19	360	...	20	
November	2	2	3	...	...	4	11	148	...	1	33	117	717	3	23
December	3	1	31	1	19	3	1	49	...	12	48	122	989	2	43	
1930—																
January	13	34	163	4	51	7	33	95	2	10	110	276	1,896	5	20	
February	10	..	139	...	69	2	3	86	1	12	65	311	930	3	37	
March	3	..	5	...	...	2	2	34	1	4	36	67	672	2	15
April	18	4	338	2	227	8	..	65	...	4	87	79	1,334	1	5	
May	31	23	498	3	203	6	5	28	...	3	66	96	2,995	...	20	
June	2	2	8	...	7	1	..	28	...	9	28	8	507	...	9	
Totals	106	71	1,381	10	625	42	58	845	4	75	613	1,261	11,512	16	222	
Percentage of Reactors .....	...	...	...	14.08	45.26	...	...	...	6.90	8.88	...	...	...	1.27	1.93
Average Percentage..	...	...	...	43.73	...	...	...	...	8.75	...	...	...	...	1.86	...

COMPARISON OF TOTAL NUMBER OF CATTLE TESTED UNDER ACCREDITED HERD PLAN FOR PAST FIVE YEARS

	<i>Purebred</i>					<i>Grades</i>					<i>Total</i>				
	1925-26	1926-27	1927-28	1928-29	1929-30	1925-26	1926-27	1927-28	1928-29	1929-30	1925-26	1926-27	1927-28	1928-29	1929-30
<i>Final</i>															
Tested	751	815	965	970	1,015	6,643	6,817	21,030	11,940	10,754	7,394	7,632	21,995	12,910	11,769
Not tested	131	130	173	83	124	1,820	2,066	5,664	2,941	3,577	1,951	2,196	5,837	3,024	3,701
Percentage of Reactors .....	...	...	...	...	...	....	....	....	....	....	26.39	28.77	26.54	23.42	31.44
<i>Condition</i>															
Tested	443	361	112	602	829	4,925	4,536	1,395	5,766	8,415	5,368	4,897	1,507	6,368	9,244
Not tested	11	16	10	19	16	388	358	63	306	343	399	374	73	325	359
Percentage of Reactors .....	...	...	...	...	...	....	....	....	....	....	7.43	7.63	4.18	5.10	3.88
<i>Number Tests</i>															
Tested	11,653	12,143	14,762	14,701	15,549	33,241	33,693	45,514	68,846	69,546	44,894	45,836	60,276	83,547	85,095
Not tested	229	132	133	173	282	932	481	983	1,232	1,347	1,161	613	1,116	1,405	1,629
Percentage of Reactors .....	...	...	...	...	...	....	....	....	....	....	2.58	1.31	1.85	1.68	5.22
<i>Total</i>															
Tested	12,847	13,319	15,839	16,273	17,393	44,809	45,046	67,939	86,552	88,715	57,656	58,365	83,778	102,825	106,108
Not tested	371	278	316	275	422	3,140	2,905	6,710	4,479	5,267	3,511	3,183	7,026	4,754	5,689
Percentage of Reactors	6.09	5.45	8.39	4.62	5.36

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CATTLE SLAUGHTERED—ACCREDITED

	<i>Reactors Slaughtered</i>
1929	
July	155
August	336
September	280
October	179
November	440
December	652
1930	
January	967
February	478
March	149
April	641
May	309
June	533
Total	5,119

NATIVE CATTLE, JULY, 1929-JUNE, 1930

Tested by Private Veterinarians

	HERD TESTS				OTHER TESTS				TESTS FOR EXPORT			
	Number of Lots	Number Tested	Number Reacted	Per Cent Reacted	Number of Lots	Number Tested	Number Reacted	Per Cent Reacted	Number of Lots	Number Tested	Number Reacted	Per Cent Reacted
29—												
July	16	74	3	4.05	4	44	...	...	2	15	...	...
August	9	78	4	5.13	...	...	...	...	...	...	...	...
September	5	45	2	4.44	3	22	...	...	3	30	...	...
October	12	29	1	3.45	3	99	...	...	2	5	...	...
November	13	47	6	1.28	2	97	...	...	1	2	...	...
December	9	126	2	1.59	2	63	...	...	1	1	...	...
30—												
January	19	101	3	2.97	...	...	...	...	...	...	...	...
February	15	106	9	8.49	...	...	...	...	2	21	2	9.52
March	29	392	11	2.80	...	...	...	...	2	37	...	...
April	37	369	14	3.79	1	63	...	...	...	...	...	...
May	59	772	17	2.20	3	123	...	...	...	...	...	...
June	20	192	2	1.04	...	...	...	...	3	6	...	...
Totals	243	2,331	74	3.17	18	511	...	...	16	117	2	1.70

NATIVE CATTLE, JULY, 1929-JUNE, 1930

Tested by Bureau Veterinarians

	HERD TESTS				OTHER TESTS				TESTS FOR EXPORT			
	<i>Number of Lots</i>	<i>Number Tested</i>	<i>Number Reacted</i>	<i>Per Cent Reacted</i>	<i>Number of Lots</i>	<i>Number Tested</i>	<i>Number Reacted</i>	<i>Per Cent Reacted</i>	<i>Number of Lots</i>	<i>Number Tested</i>	<i>Number Reacted</i>	<i>Per Cent Reacted</i>
929—												
July	1	34	...	...
August
September
October
November
December
930—												
January
February
March
April
May
June
Totals	1	34	...	...

COMPARISON OF THE NUMBER OF TESTS MADE ON NATIVE CATTLE, NOT UNDER STATE AND FEDERAL SUPERVISION, FOR THE PAST FIVE YEARS

Tested by Private Veterinarians

Year	HERD TESTS				OTHER TESTS				TESTS FOR EXPORT				TOTAL			
	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors
1925-1926...	311	3,675	199	5.41	45	194	4	2.06	22	83	6	7.22	378	3,952	209	5.29
1926-1927...	262	2,977	155	5.20	74	133	4	3.00	23	92	..	...	359	3,202	159	4.96
1927-1928...	362	2,539	174	6.85	9	160	2	1.25	17	42	..	...	388	2,741	176	6.42
1928-1929...	253	2,428	99	4.06	30	639	2	.31	25	83	1	1.2	308	3,150	102	3.24
1929-1930...	243	2,331	74	3.17	18	511	..	...	16	117	2	1.70	277	2,959	76	2.57
Totals...	...	....	...	...	..	...	..	...	..	...	..	...	1,710	16,004	722	4.51

Tested by Bureau Veterinarians

Year	HERD TESTS				OTHER TESTS				TESTS FOR EXPORT				TOTAL			
	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors	Number of Lots	Animals Tested	Number of Reactors	Per Cent of Reactors
1925-1926...	4	5	3	32	7	37
1926-1927...
1927-1928...
1928-1929...
1929-1930...	1	34	1	34
Totals...	8	71

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IMPORT CATTLE

<i>Tested Before Entering State by Private Veterinarians</i>	<i>Number Lots</i>	<i>Animals Tested</i>	<i>Number Reactors</i>	<i>Percentage Reactors</i>
1929—				
July	67	1,592	1	.06
August	120	2,250	..	..
September	77	1,926	..	..
October	67	1,802	1	.05
November	127	2,885	..	..
December	48	1,260	..	..
1930—				
January	69	1,279	1	.08
February	51	1,056	..	..
March	68	1,520	..	..
April	72	1,414	1	.07
May	89	2,030	1	.04
June	79	1,763	..	..
Totals	934	20,777	5	.03

<i>Tested Before Entering State by U. S. B. A. I. Veterinarians</i>	<i>Number Lots</i>	<i>Animals Tested</i>	<i>Number Reactors</i>	<i>Percentage Reactors</i>
1929—				
July	5	65	..	..
August	14	170	..	..
September .....	..	...	..	..
October .....	..	...	..	..
November	17	103	..	..
December	1	8	..	..
1930—				
January	4	67	..	..
February	1	12	..	..
March	2	22	..	..
April	3	78	..	..
May	2	77	..	..
June	2	32	..	..
Totals	51	634	..	..

<i>Tested After Entering State by Private Veterinarians</i>	<i>Number Lots</i>	<i>Animals Tested</i>	<i>Number Reactors</i>	<i>Percentage Reactors</i>
1929—				
July	1	2	..	..
August .....	..	...	..	..
September .....	..	...	..	..
October .....	..	...	..	..
November	1	1	..	..
December .....	..	...	..	..
1930—				
January	1	1	..	..
February .....	..	...	..	..
March .....	..	...	..	..
April	1	21	..	..
May	2	23	..	..
June .....	..	...	..	..
Totals	<hr/> 6	<hr/> 48	<hr/> ..	<hr/> ..

MONTHLY COMPARISON OF ANIMALS RECEIVED FROM THE FOLLOWING STATES FOR DAIRY AND BREEDING PURPOSES, YEAR ENDING JUNE, 1930

<i>Points of Origin</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>Total</i>
Athenia (Quarantine)	46	99	....	....	74	8	....	....	....	76	69	4	376
Canada	50	87	47	55	76	71	95	44	21	76	52	30	704
Colorado . . . . .	....	....	....	....	9	....	....	....	....	....	....	....	9
Connecticut . . . . .	....	....	....	....	4	....	2	....	1	....	....	....	7
Delaware . . . . .	....	7	....	....	11	....	....	....	....	....	5	....	23
Georgia . . . . .	....	....	....	....	3	....	....	....	....	....	....	....	3
Illinois . . . . .	....	....	....	....	2	....	....	....	....	....	2	....	4
Iowa . . . . .	....	....	....	20	....	49	....	....	....	8	....	....	77
Kansas . . . . .	....	....	....	....	....	....	....	1	....	....	....	....	1
Kentucky	182	1	....	....	....	....	....	....	2	....	....	....	185
Lancaster (Yds.)	19	18	....	....	....	....	77	12	15	....	....	....	141
Maine . . . . .	....	29	....	....	21	21	....	....	....	....	....	....	71
Maryland	8	18	....	14	30	....	43	....	7	32	65	86	303
Massachusetts . . . . .	....	9	....	....	27	....	....	....	....	....	....	....	36
Michigan	267	384	377	372	446	267	341	306	234	322	363	390	4,069
Minnesota . . . . .	....	1	65	....	....	10	....	....	....	....	....	....	76
Missouri . . . . .	....	....	....	....	....	....	50	4	....	....	....	....	54
New York	75	106	43	51	156	28	67	87	28	79	100	57	877
North Carolina . . . . .	....	27	....	....	14	....	....	....	....	....	....	....	41
Ohio	243	321	288	204	310	45	142	81	172	153	77	179	2,215
Pennsylvania	92	232	166	115	163	48	81	51	114	167	257	238	1,724
Tennessee	42	....	60	....	368	....	8	....	....	....	....	109	587
Texas . . . . .	....	....	....	....	1	....	....	....	....	....	....	....	1
Vermont . . . . .	....	50	....	33	12	48	....	....	32	....	....	64	239
Virginia	87	118	48	90	260	42	32	49	21	49	21	12	829
Wisconsin	533	875	821	824	971	612	392	420	878	536	1,091	604	8,557
Totals	1,644	2,382	1,915	1,778	2,958	1,249	1,330	1,055	1,525	1,498	2,102	1,773	21,209

RECORD OF THE DAIRY AND BREEDING CATTLE IMPORTED FROM THE VARIOUS STATES AS LISTED
DURING THE PAST FIVE FISCAL YEARS

<i>State</i>	1925-1926	1926-1927	1927-1928	1928-1929	1929-1930	<i>Total Number of Cattle Imported Five Years</i>	<i>Per Cent of Total Number of Cattle Imported</i>
Arkansas .....	....	1	36	....	376	413	.3749
Athenia Quar. Station ..	277	152	229	186	....	844	.7661
Buffalo Yds.	1,198	....	....	....	....	1,198	1.087
Canada .....	....	....	1,107	1,814	704	3,625	3.290
California .....	....	1	....	1	....	2	.0018
Cincinnati	239	....	....	....	....	239	.2169
Colorado .....	....	....	....	....	9	9	.0081
Connecticut .....	....	17	4	26	7	54	.0490
Delaware	2	21	115	28	23	189	.1715
Georgia	1	....	....	....	3	4	.0036
Illinois	14	....	....	26	4	44	.0399
Indiana	24	79	42	....	....	145	.1316
Iowa	40	6	4	....	77	127	.1152
Kansas .....	....	....	....	....	1	1	.0009
Kentucky	323	376	192	93	185	1,169	1.061
Lancaster Yds.	205	....	298	394	141	1,038	.9422
Maine	17	....	194	79	71	361	.3277
Maryland	410	157	158	228	303	1,256	1.140
Massachusetts	114	52	37	6	36	245	.2224
Michigan	6,790	7,949	3,342	3,799	4,069	25,949	23.556
Minnesota	29	....	251	55	76	411	.3730
Mississippi .....	....	....	90	64	....	154	.1397
Missouri .....	....	....	....	1	54	55	.0499
New Hampshire	30	....	44	13	....	87	.0789

New York	2,236	1,395	1,133	1,045	877	6,686	6.069
North Carolina	133	45	124	107	41	450	.4085
Ohio	1,135	1,376	1,809	2,439	2,215	8,974	8.146
Oregon	72	.....	.....	.....	.....	72	.0653
Pennsylvania	3,796	3,551	1,959	2,182	1,724	13,212	11.993
Rhode Island .....	.....	3	.....	.....	.....	3	.0027
South Carolina .....	.....	7	86	.....	.....	93	.0844
Tennessee	216	471	548	353	587	2,175	1.974
Texas .....	.....	.....	.....	.....	1	1	.0009
Vermont	426	366	334	321	239	1,686	1.530
Virginia	304	611	1,051	1,226	829	4,021	3.650
Washington, D. C. ....	.....	.....	2	.....	.....	2	.0018
Wisconsin	2,301	3,254	10,434	10,619	8,557	35,165	31.922
Total	20,332	19,890	23,623	25,105	21,209	110,159	

BANG ABORTION DISEASE CONTROL

The control and eradication of Bang abortion disease in cattle has assumed nation-wide importance and is receiving a great deal of consideration from dairymen because of its economic importance and from sanitary officials because of its alleged relationship to public health.

An article appeared in the May, 1929, issue of the *Ladies Home Journal* directing the attention of the public to a relationship between Bang abortion disease infection in cattle and undulant fever in man.

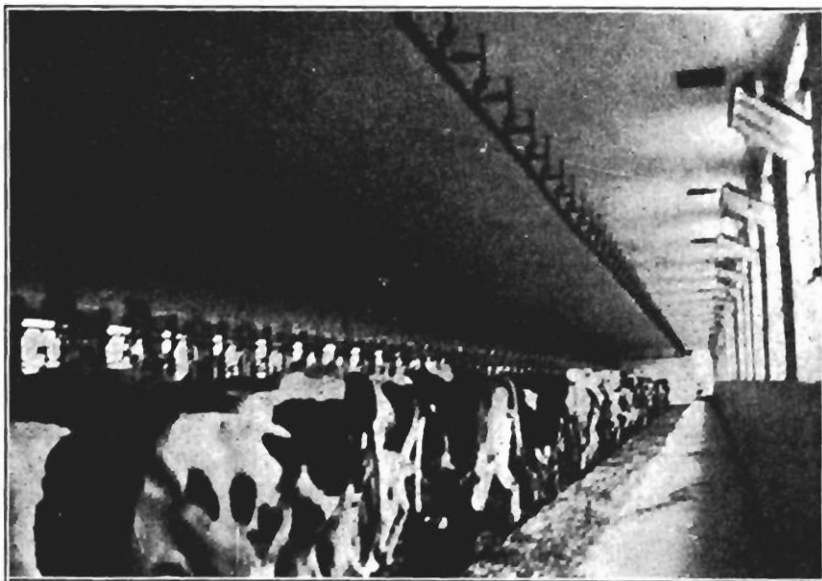


FIG. 3

Herd under supervision for the eradication of bovine tuberculosis and contagious abortion

A second article which discussed malta fever was published in the February, 1930, issue of *Good Housekeeping*. This refuted many of the extravagant statements made in the previous article relative to the dangers of drinking unpasteurized milk which, no doubt, have been grossly exaggerated. We quote from a recent issue of the *Journal of the American Medical Association*, "Any assumption that infected raw milk is the causative factor should be carefully scrutinized and all other possible avenues closed."

The plan for the handling of this disease in New Jersey, under the provisions of Chapter 179 of the Laws of 1926 and as presented in the annual report for the fiscal year 1928 to 1929, has been modified in slight detail and that only in order to meet the advances made through observation and further development of our knowledge of this disease.

Following the suggestions as made in last year's annual report and in order to protect the dairy industry and prevent the possible movement of known reactors, the following regulation was promulgated by the State Board of Agriculture, effective September 20, 1929:

"1. Dairy and breeding cattle which have at any time given a positive or suspicious reaction to the agglutination test or any other method of testing for contagious or infectious abortion recognized by the New Jersey State Board of Agriculture if consigned to New Jersey points must remain in quarantine on arrival at destination to be disposed of as provided in Chapter 179 of the Laws of 1926 unless special written order for the importation of such reacting animals is secured from the Department of Agriculture, prior to the importation of such reacting animal or animals. Reacting animals brought in on such written order shall be subject to quarantine and disposition as provided in Chapter 179, Laws of 1926.

"2. All existing quarantines or orders or parts of quarantines or orders inconsistent with the provisions of this quarantine are hereby rescinded.

"3. This order shall be in force and effect from this day forward until rescinded."

Similar regulations have been adopted by Connecticut, Idaho, Maine, Maryland, Minnesota, North Dakota, Oregon, Pennsylvania, South Dakota and Wisconsin.

Many of the states in the union have advanced to the next step and now require a negative agglutination or other satisfactory test of all cattle entering them. The following named states have such regulations now in force: Alabama, Arkansas, Florida, Georgia, Indiana, Iowa, Illinois, Louisiana, Mississippi, North Carolina, Ohio, Oklahoma, South Carolina, Texas and West Virginia. The Territory of Hawaii also requires a blood test on cattle entering it.

The work of the bureau in the control and suppression of Bang abortion disease enlarged considerably in the year. The number of herds placed under supervision increased since the last report and all the certified dairies of the state are now being tested. In the past decade, many so-called cures for Bang abortion disease have been recommended and marketed, but this phase of the work has not met with popular approval and does not have a very satisfactory outlook.

Vaccination by the use of live cultures has been recommended by some and practiced in certain sections of the United States but, as public health officials and the live stock industry desire to eradicate the disease, measures practiced to perpetuate it are not recommended.

LIST BY COUNTIES OF THE NUMBER OF HERDS UNDER STATE SUPERVISION FOR THE ERADICATION OF BANG ABORTION DISEASE

Atlantic .....	..
Bergen	1
Burlington	10
Camden	2
Cape May	3
Cumberland	2
Essex	1
Gloucester	2
Hudson .....	..
Hunterdon	6
Mercer	23
Middlesex	7
Monmouth	8
Morris	9
Ocean .....	..
Passaic	3
Salem .....	..
Somerset	18
Sussex .....	..
Union	2
Warren	2
Total	<hr/> 99

The following herds, having passed the required number of tests and the owners having complied with the requirements prescribed by the Bureau of Animal Industry of the New Jersey Department of Agriculture for the maintenance of the herd for the prevention and eradication of Bang abortion disease, were issued accredited herd certificates:

<i>OWNER'S NAME</i>	<i>ADDRESS</i>
R. L. Benson.....	Coventry Farm, Princeton
William T. White.....	Hill Top Farm, Princeton
Clarence Dillon	Dunwalke Farm, Far Hills
E. W. Wadley.....	Sunnyside Farm, Red Bank
Dr. J. E. Russell.....	R. D. No. 4, Trenton
Mrs. Elmer H. Geran.....	Matawan
Vineland Training School.....	Vineland
Van Zandt Brothers.....	Blawenburg
L. F. Loree.....	West Orange

There are four quarantine farms in the state where reactors are held in quarantine until such time as they become unprofitable, when they are sent to slaughter on written order issued by the chief of the Bureau of Animal Industry.

The following summary will show the work accomplished in the program arranged for the eradication of Bang abortion disease in the state:

Total number of animals bled since the work commenced.....	31,994
Total number of animals showing positive reaction.....	4,084—12.77%
Total number of animals showing negative reaction.....	27,910—87.23%
Total number of animals bled on initial test since work commenced..	6,558
Total number of animals showing positive reaction.....	1,772—27.02%
Total number of animals showing negative reaction.....	4,786—72.98%

Included in the herds under supervision for the eradication of Bang abortion disease are eleven owned by the various state institutions. A summary of this work follows:

Total number of animals bled in state institution herds.....	868
Total number of animals showing positive reaction.....	252—29%
Total number of animals showing negative reaction.....	596—71%

Four of the certified dairies in the state, comprising 2,794 animals, are being maintained under supervision.

SWINE DISEASE CONTROL

A study of the summary of the work in swine disease control indicates that practically all effort is directed towards the immunization of hogs against cholera, one of the serious infectious swine diseases.

The total number of animals vaccinated in this fiscal year was 61,371 as compared to 34,241 in the last fiscal year. The increase is 79.23 per cent. This large increase is confined chiefly to the hogs vaccinated in the garbage feeding districts of Westville and Secaucus. There are a number of other areas, including some in Monmouth, Atlantic and Cape May counties, where garbage feeding is carried on in a small way. The hog cholera protective inoculation work in these sections is done chiefly by private practitioners, some located in New Jersey and quite a number in Philadelphia and other Pennsylvania points.

The hog cholera vaccination work done by the bureau has materially decreased and is carried on only in isolated districts, where the services of private veterinarians are not available. This work is planned by the county agents. It is the desire of the department to have all hogs double treated as a protection against cholera. When the double treatment is given, both serum and virus are administered to the hogs. A single treatment consists of the administration of serum alone. This work usually is conducted twice annually, in the spring and fall. By

this method all of the young pigs are vaccinated and there is very little, if any, danger of subsequent losses. A summary of the vaccination work follows:

SUMMARY BY MONTHS OF THE NUMBER OF HOGS TREATED FOR
CHOLERA BY BUREAU AND PRIVATE VETERINARIANS,
JULY, 1929, TO JUNE, 1930

	<i>Bureau Veterinarians</i>		<i>Private Veterinarians</i>	
	<i>Single Treatments</i>	<i>Double Treatments</i>	<i>Single Treatments</i>	<i>Double Treatments</i>
July	7	1,094	74	10,469
August .....	..	325	11	9,894
September	25	1,495	136	4,229
October .....	..	263	106	8,733
November ....	..	157	39	3,297
December ....	..	851	16	2,873
January .....	..	117	35	709
February .....	..	433	..	1,791
March .....	..	13	..	5,437
April .....	..	213	3	925
May	2	751	157	4,663
June	1	516	..	1,491
Totals....	35	6,228	577	54,531
Total Single			612	
Total Double			60,759	
Grand Total			61,371	

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SUMMARY BY COUNTIES OF THE NUMBER OF HOGS TREATED
FOR CHOLERA BY BUREAU AND PRIVATE VETERINARIANS,

JULY, 1929, TO JUNE, 1930

	<i>Bureau Veterinarians</i>		<i>Private Veterinarians</i>	
	<i>Single Treatments</i>	<i>Double Treatments</i>	<i>Single Treatments</i>	<i>Double Treatments</i>
Atlantic	10	3,285	...	781
Bergen .....	..	...	...	....
Burlington ...	6	358	...	523
Camden .....	..	74	...	5,896
Cape May ...	..	793	42	1,220
Cumberland ..	..	182	15	660
Essex .....	..	...	...	36
Gloucester ...	..	203	125	15,805
Hudson .....	..	...	...	20,109
Hunterdon ...	..	...	6	630
Mercer .....	..	387	60	400
Middlesex ...	..	...	35	331
Monmouth ...	..	458	228	4,092
Morris .....	..	...	...	604
Ocean .....	..	229	...	46
Passaic .....	..	...	...	736
Salem .....	..	...	29	949
Somerset	19	201	1	473
Sussex .....	..	...	...	343
Union .....	..	58	25	800
Warren .....	..	...	11	97
Totals ...	35	6,228	577	54,531
	Total Single		612	
	Total Double		60,759	
	Grand Total		61,371	

COMPARISON OF SUMMARIES, 1925 TO 1930

<i>Treated by</i>	1925-1926	1926-1927	1927-1928	1928-1929	1929-1930
<i>Bureau Veterinarians</i>					
Single Treatments	527	624	387	38	35
Double Treatments	4,503	8,931	9,575	6,622	6,228
	5,030	9,555	9,962	6,660	6,263
<i>Treated by</i>					
<i>Private Veterinarians</i>					
Single	561	1,392	1,286	1,521	577
Double	7,324	13,305	18,716	26,060	54,531
	7,885	14,697	20,002	27,581	55,108
<i>Totals</i>					
Single	1,088	2,016	1,673	1,559	612
Double	11,827	22,236	28,291	32,682	60,759
	12,915	24,252	29,964	34,241	61,371

GLANDERS

It is seldom now that the bureau receives reports of animals suspected of being affected with glanders. One reason for this is that there are very few horses used on farms in New Jersey except for light work and trucking purposes.

Acting on information received of the existence of glanders in a stable of six horses in southern New Jersey, bureau representatives were detailed to make an investigation and conduct a mallein test. As result, two horses were condemned and destroyed; the other four were negative to the test. The bureau veterinarians quarantined the premises and supervised their cleaning and disinfection in order to destroy any infection that might exist.

After a conference with Dr. T. E. Smith, of 309 Barrow street, Jersey City, a private practitioner who was detailed by the Department of Agriculture to supervise the mallein testing and banding of horses used in traffic between New Jersey and New York points, it was decided to discontinue the work for the present as no cases of glanders have been found in the past several years.

GLANDERS, 1929 TO 1930

	<i>Negative</i>	<i>Positive</i>
July	63	..
August	24	..
September	23	..
October	9	..
November	10	..
December	6	..
January	32	..
February	9	..
March	28	2
April	69	..
May	49	..
June	64	..
Totals	386	2

COMPARISON OF GLANDERS SUMMARIES, 1925 TO 1930

	1925-1926	1926-1927	1927-1928	1928-1929	1929-1930
Negative	169	131	566	566	386
Positive .....	..	..	1	1	2
Totals	169	131	567	567	388

FORAGE POISONING OR PASTURE DISEASE

There were no outbreaks of forage poisoning or pasture disease reported to the bureau in the past fiscal year and it was not called upon to administer protective inoculation to animals in the areas where this disease previously had been diagnosed. However, one private practitioner reported that he had diagnosed the disease on three premises. Two animals died and three others were treated. No further losses were sustained.

ANTHRAX

The work of the bureau in the fiscal year in the control of anthrax was confined to the vaccination of horses and cattle as a protection against the disease. This work was conducted in April. The number of animals treated was smaller than in previous years. The decrease was probably due to the fact that there has not been a recent outbreak of anthrax and, for that reason, the livestock owners have neglected to have this work done. Following is a comparative summary of the number of cattle and horses vaccinated in the past five years:

	<i>Cattle</i>	<i>Horses</i>	<i>Total</i>
1929-1930	685	65	750
1928-1929	905	101	1,006
1927-1928	1,265	74	1,339
1926-1927	1,413	119	1,532
1925-1926	2,214	379	2,593

NUMBER OF STALLIONS REGISTERED

<i>Breed</i>	1925	1927	1928	1929	1930
Percheron (registered)	11	8	6	7	4
Standardbred (registered)	2	2	2	...	...
Clydesdale (registered)	1	...	...	1	...
Belgian (registered) .....	...	...	...	...	1
Suffolk (registered) .....	...	...	...	...	...
Thoroughbred (registered)	3	2	...	4	...
German Coach (registered) .....	...	...	...	...	...
Arabian (registered) .....	...	1	1	...	...
Jacks (registered)	1	1	...	...	...
Standardbred (non-registered) .....	...	...	...	...	...
Suffolk (non-registered) .....	...	...	...	...	...
German Coach (non-registered) .....	...	...	...	...	...
Jacks (non-registered)	2	2	...	2	1
*Grade Drafts	8	6	1	1	...
Totals	28	22	10	15	6

* Includes grade Percherons, Belgians and Clydesdales.

STALLION REGISTRATION BY COUNTIES

<i>County</i>	1926	1927	1928	1929	1930
Atlantic .....	...	...	...	...	...
Bergen .....	...	...	...	...	...
Burlington	3	5	1	...	...
Camden .....	...	...	2	...	...
Cape May .....	...	...	...	...	...
Cumberland	2	1	...	1	...
Essex .....	...	...	...	...	...
Gloucester .....	...	...	...	...	...
Hudson .....	...	...	...	...	...
Hunterdon	9	7	2	5	3
Mercer .....	...	...	1	...	...
Middlesex	2	2	2	2	...
Monmouth	2	2	...	3	...
Morris .....	...	1	...	...	...
Ocean .....	...	...	...	...	...
Passaic .....	...	...	...	...	...
Salem	2	...	...	...	1
Somerset	3	2	1	2	...
Sussex .....	...	...	...	...	...
Union .....	...	...	...	...	...
Warren	5	2	1	2	2
Totals	28	22	10	15	6

POULTRY DISEASE CONTROL

The regulatory work relative to the different phases of poultry disease control in the state has been through a readjustment and the responsibility for the enforcement of the laws, rules and regulations relative to the control of diseases of poultry has been assigned to the Department of Agriculture.

In the fiscal year, the work was divided into five distinct lines as follows:

1. Car inspection of poultry shipped into the state and consigned to railroad terminals.
2. Fowl-pox vaccination at the request of the owners at a fixed price for material and service.
3. Pullorum disease control in cooperation with the Bureau of Markets' certification of flocks, the bleeding and testing of the blood and the disposal of reactors being carried out by the Bureau of Animal Industry.

4. Prevention of the spread of avian tuberculosis.
 - (a) Field inspection of poultry flocks on farms where tuberculosis eradication is being carried out.
 - (b) Recommending the tuberculin testing of all breeding cockerels and pullets shipped into the state.
5. The eradication of an outbreak of European fowl pest, which was diagnosed by representatives of the Bureau of Animal Industry and by inoculation experiments made by the Federal Bureau of Animal Industry at Washington, D. C.

POULTRY INSPECTION

The work of inspecting car lots of poultry arriving at poultry terminals is conducted by bureau veterinarians, who are delegated to inspect each car and release without restriction those without diseased birds. Where disease exists, cars are directed under the law to be delivered to points where the poultry is killed under proper inspection.

A study of the reports indicates that the quality of the poultry shipped in the past fiscal year is much above that of previous years. While there were fewer birds shipped, the percentage of diseased poul-

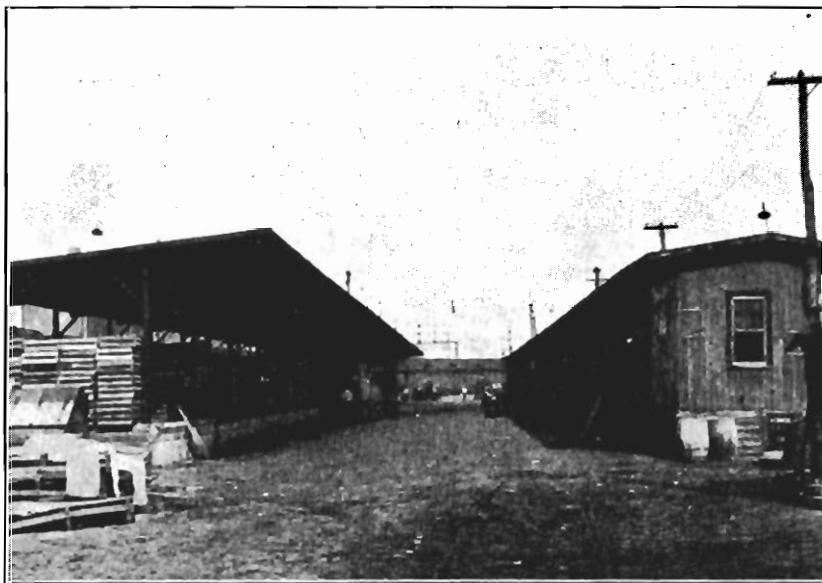


FIG. 4

Inspected poultry in crates at railroad terminal waiting to be loaded in trucks

try, both in number and weight, is much less than that of previous years.

Birds are more often affected with disease in the fall and spring than at all other seasons. However, in the winter, when there are severe changes in the weather, bad cases of roup and infectious bronchitis may be found. It has been the desire of the department to supervise the inspection work in such a manner that poultry might be handled at a minimum expense and also that the work might be conducted as efficiently as possible.

The City of Newark is enforcing its zoning regulations. As a result, the commission houses handling poultry will be moved and segregated at a designated point within the city limits. The Erie Railroad Company has offered a site and it is our understanding that it will soon complete a building, locating the commission firms at the Erie railroad terminal, where live poultry is received. This will mean that all of the poultry shipped into Newark will go to one instead of four delivery points.

The same plan eventually will be operative at Weehawken, as the Erie Railroad Company, co-operating with outside agencies, will establish a poultry receiving yard at the site of the present Erie poultry yard. It will install tracks, unloading platforms and other equipment and all poultry now moved to the Jersey City, Hoboken, Weehawken and Communipaw yards will be sent to a central point. This will facilitate the handling of the inspection work.

Those who are acquainted with the dangers of the spread of such infectious diseases as European fowl pest will appreciate the value that will come when receiving points are centralized. Following is a summary of the carlots of poultry inspected and released in the fiscal year and a comparison of the number of cars released in the past five fiscal years:

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CARLOTS OF POULTRY RELEASED FROM VARIOUS STATES, JULY 1, 1929, TO JUNE 30, 1930

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	Total
Alabama	5	5	2	2	2	29	4	19	18	24	15	1	122
Arkansas	32	30	3	2	7	13	17	33	27	51	32	23	270
Colorado	7	9	3	..	3	6	6	4	7	3	4	3	55
Delaware	..	..	1	..	..	..	..	..	..	..	..	..	1
Florida	..	..	..	..	..	..	1	1	..	..	..	..	2
Georgia	8	15	1	..	..	2	6	16	17	36	17	..	118
Illinois	48	40	38	45	84	57	96	52	52	65	47	47	671
Indiana	72	99	96	88	140	116	88	49	33	47	59	59	946
Iowa	29	30	34	22	33	44	42	6	3	1	11	29	284
Kansas	10	12	10	8	5	12	17	9	11	11	26	12	143
Kentucky	16	10	13	5	11	8	14	8	17	48	49	21	220
Michigan	1	1	3	..	..	..	..	..	..	..	..	..	5
Minnesota	3	4	3	2	13	15	5	3	3	1	1	2	55
Mississippi	3	1	..	1	..	5	4	8	14	12	6	..	54
Nebraska	41	55	47	49	63	43	49	38	15	20	28	34	482
Missouri	84	110	83	63	99	84	84	49	51	67	64	86	924
New Jersey	1	..	..	..	..	..	..	..	..	..	..	..	1
North Carolina	7	14	6	2	9	1	9	24	19	27	19	3	131
North Dakota	..	1	5	7	9	..	1	..	..	2	..	..	25
Ohio	32	45	41	55	94	82	45	20	11	12	17	18	472
Oklahoma	53	71	40	33	27	18	69	59	59	70	40	..	539
Pennsylvania	13	8	5	12	9	12	11	3	1	1	1	31	107
South Carolina	4	4	1	1	..	..	1	9	11	11	6	1	49
South Dakota	21	13	18	19	39	32	32	14	4	7	5	10	214
Tennessee	36	41	16	12	19	44	55	44	56	123	109	36	591
Texas	10	6	..	..	6	6	21	38	20	26	14	10	157
Virginia	1	..	1	..	..	6	8	8	7	13	9	4	57
Wisconsin	17	22	18	17	22	9	2	..	..	..	1	14	122
Wyoming	..	..	1	..	3	1	2	1	..	1	..	1	10
Totals	554	646	487	445	686	645	689	515	456	679	580	445	6,827

STATE DEPARTMENT OF AGRICULTURE

NUMBER OF BIRDS CONDEMNED AND THEIR APPROXIMATE
WEIGHT, JULY, 1929, TO JUNE, 1930

	<i>Number Cars</i>	<i>Number Birds</i>	<i>Number Lbs.</i>
July* .....	..	....	....
August	6	1,016	2,469
September	6	702	2,077
October	9	699	2,201
November	6	533	1,830
December	4	513	1,621
January	17	1,937	7,748
February	16	1,190	4,760
March	2	104	416
April* .....	..	....	....
May* .....	..	....	....
June* .....	..	....	....
	66	6,694	23,122

* No birds were condemned in these spring and summer months.

COMPARISON OF CARLOTS OF POULTRY RELEASED AT THE VARIOUS RAILROAD TERMINALS IN NEW JERSEY

July 1, 1929-June 30, 1930

Month	Asb.	D., L. &		D., L. &		Erie	Pa.	Erie	Pa.	Pa.	D., L. & W.	Total	
	Ph.	C. R. R. Nrk.	W. Nrk.	C. R. R. N. J.	W. J. C.								D., L. & W. Passaic	Whkn. Eliz.	Nrk.	J. C.	Nrk.	Boonton
July	3	..	..	67	175	..	221	5	61	12	10	..	554
August	4	..	..	55	243	..	244	5	57	13	25	..	646
September .....	..	..	1	22	160	..	95	8	160	15	26	..	487
October .....	..	..	..	26	138	..	200	6	43	14	18	..	445
November .....	..	..	..	34	194	..	309	10	66	28	23	22*	686
December .....	..	2	..	98	182	..	226	9	63	31	24	10*	645
January .....	..	1	..	82	168	..	292	11	77	30	23	5*	689
February .....	..	..	..	111	125	..	197	5	57	5	14	1*	515
March .....	..	..	..	106	132	..	144	4	48	3	19	..	456
April .....	..	1	..	178	176	..	216	7	56	8	37	..	679
May .....	..	..	..	149	140	..	194	6	47	19	25	..	580
June	1	..	50	102	..	205	4	53	10	20	..	445
Totals	7	5	1	978	1,935	..	2,543	80	788	188	264	38	6,827

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COMPARISON OF CARLOTS OF POULTRY RELEASED AT THE VARIOUS RAILROAD TERMINALS IN NEW JERSEY

July 1, 1928-June 30, 1929

<i>Month</i>	<i>Asb. Pk.</i>	<i>C. R. R. Nrk.</i>	<i>C. R. R. N. J.</i>	<i>D., L. & W. Boonton</i>	<i>D., L. & W. J. C.</i>	<i>D., L. & W. Nrk.</i>	<i>Erie Whkn.</i>	<i>Erie Nrk.</i>	<i>Pa. Eliz.</i>	<i>Pa. Nrk.</i>	<i>Pa. J. C.</i>	<i>Total</i>
July	3	..	72	..	169	9	229	41	9	28	11	571
August	3	..	52	..	181	15	295	42	10	26	11	635
September .....	..	..	41	..	183	10	259	53	8	26	5	585
October .....	..	..	23	11*	154	9	230	54	8	23	11	523
November .....	..	2	57	17*	223	11	324	75	11	38	6	764
December .....	..	1	58	9*	180	7	244	63	9	34	9	614
January .....	..	..	37	..	165	6	236	60	7	20	5	536
February .....	..	..	102	..	168	4	213	42	6	31	8	574
March .....	..	2	200	..	178	7	207	47	10	46	9	706
April .....	..	..	236	..	145	5	161	35	8	35	9	634
May .....	..	..	170	..	127	5	163	36	8	31	10	550
June .....	..	..	50	..	80	1	126	24	5	17	11	314
Totals	6	5	1,098	37	1,953	89	2,687	572	99	355	105	7,006

* Carlots of geese.

Following is a comparison of the number of carlots of poultry released monthly at the New York City and New Jersey railroad terminals in the past fiscal year:

	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>April</i>	<i>May</i>	<i>June</i>	<i>Total</i>
New Jersey	554	646	487	445	686	645	689	515	456	679	580	445	6,827
New York City	321	402	506	557	412	551	387	342	387	515	412	356	5,148

Following is the number of carlots of poultry released at the various railroad terminals in New Jersey in the past five years:

<i>July 1, 1925, to June 30, 1926</i>	<i>July 1, 1926, to June 30, 1927</i>	<i>July 1, 1927, to June 30, 1928</i>	<i>July 1, 1928, to June 30, 1929</i>	<i>July 1, 1929, to June 30, 1930</i>
8,394	8,569	8,424	7,006	6,827

The number of carlots received at the New York City terminals in the past five years was as follows:

<i>July, 1925, to June, 1926</i>	<i>June 30, 1927 June, 1927</i>	<i>July, 1927, to June, 1928</i>	<i>July, 1928, to June, 1929</i>	<i>July, 1929, to June, 1930</i>
3,528	4,245	4,578	4,440	5,148

FOWL-POX VACCINATION

The results of fowl-pox vaccination work as reported by bureau veterinarians and poultrymen have been very satisfactory. There were no outbreaks of fowl-pox following vaccination. The pullets went into the laying houses and no trouble, such as had been encountered in previous years, was experienced. In the past season, 159 poultry owners made application for the vaccination of 151,856 birds, all of which were taken care of by the bureau.

Acting under the provisions of the Biological Products Law, veterinarians who made application and desired to vaccinate poultry were given permits which, according to the Veterinary Practice Act, permitted them to vaccinate any flocks whose owners requested them to do so. Nine such permits were granted during the year. Twenty permits were issued to poultrymen allowing them to vaccinate their own flocks but not those of their neighbors.

SUMMARY SHOWING THE NUMBER OF FLOCKS AND THE NUMBER OF FOWLS VACCINATED BY BUREAU REPRESENTATIVES AS A PROTECTION AGAINST FOWL-POX IN THE YEAR ENDING JUNE, 1930

<i>County</i>	<i>No. Flocks Vaccinated</i>	<i>No. Fowls Vaccinated</i>
Atlantic	1	400
Bergen	4	3,260
Burlington	9	7,643
Camden	2	2,384
Cape May	9	6,659
Cumberland	3	2,161
Essex	2	4,920
Gloucester	26	22,173
Hudson .....	...	.....
Hunterdon	15	11,780
Mercer	5	14,224
Middlesex	10	6,250
Monmouth	10	9,874
Morris	2	1,191
Ocean	26	25,213
Passaic	3	4,550
Salem	1	215
Somerset	26	23,999
Sussex .....	...	.....
Union	3	4,110
Warren	2	850
Totals	159	151,856

FOLLOWING IS A SUMMARY BY BREEDS OF THE FOWLS VACCINATED AS A PROTECTION AGAINST FOWL-POX:

<i>White Leghorn</i>	<i>Jersey Black Giants</i>	<i>Barred Rocks</i>	<i>Total</i>
148,386	1,900	1,120	151,856

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PULLORUM DISEASE

Work on the control of pullorum disease was done by the Bureau of Markets cooperating with the poultry pathologist at the New Jersey Experiment Station, until last year, when poultrymen expressed a desire to have regulatory work transferred to the Department of Agriculture. Their request was accepted by the State Board of Agriculture, which authorized the organization of the work by the department commencing September 1, 1930.

Proper equipment was installed in the bureau's laboratory and arrangements made to co-operate with the Bureau of Markets in carrying out this request. Birds to be tested are bled by representatives of the Bureau of Animal Industry and the blood is transported to the bureau laboratory, at Trenton, where it is examined. Reports of the tests are submitted to the owners of the birds tested. Quarantines are issued to the owners of diseased birds, and these birds then are segregated and moved to designated points for slaughter under supervision.

After the birds are killed, the leg bands are collected, thus insuring that all fowls giving positive reaction to the department's tests are slaughtered and not released to enter negative flocks and spread the pullorum infection.

SUMMARY BY COUNTIES OF POULTRY BLOOD-TESTED FOR
PULLORUM DISEASE IN THE YEAR ENDING JUNE, 1930

<i>County</i>	<i>No. Birds Tested</i>	<i>No. Birds Reacting</i>	<i>Per Cent Reacting</i>
Atlantic	864	147	17.01%
Bergen	4,987	229	4.59%
Burlington	12,611	1,700	13.47%
Camden	665	7	1.00%
Cape May .....	.....	.....	.....
Cumberland	30,708	1,792	5.84%
Essex	4,424	171	3.79%
Gloucester	9,013	318	3.53%
Hudson .....	.....	.....	.....
Hunterdon	11,543	332	2.88%
Mercer	7,105	503	7.08%
Middlesex	8,997	315	3.51%
Monmouth	6,741	201	2.98%
Morris	758	47	6.20%
Ocean	2,575	56	2.17%
Passaic	8,903	347	3.90%
Salem	6,928	1,573	22.70%
Somerset	7,228	226	3.12%
Sussex	1,930	138	7.15%
Union	1,805	27	1.50%
Warren	150	.....	.....
Totals	127,935	8,129	6.4%

AVIAN TUBERCULOSIS

Tuberculosis in poultry is receiving considerable attention in the middle western states, especially the Dakotas, Iowa, Nebraska, Illinois, Ohio, Michigan and Wisconsin. In certain sections, it is so prevalent that it is of great economic significance and, unless checked, will become a serious menace to the poultry industry.

Inspection of poultry flocks in New Jersey indicates that many of the farm flocks of the state are affected with this disease and, unless steps are taken by the poultrymen to free their flocks of this disease and to import birds for breeding purposes that are negative to the tuberculin test, the poultry industry of the state will suffer sooner or later.

The bureau believes that such steps should be considered by poultry associations and a regulation covering them made operative at the earliest possible date. There is sufficient data at hand, collected by the United States Bureau of Animal Industry, to indicate that diseased areas may be quarantined and birds from such sections prevented from entering the state. If it is necessary to import certain breeds from these areas, they may be permitted to enter only after they have passed a tuberculin test.

INFECTIOUS POULTRY DISEASES

An outbreak of European fowl pest in the northern part of the state was diagnosed clinically by representatives of the Bureau of Animal Industry and by inoculation experiments by the Federal Bureau of Animal Industry, Washington, D. C. It was not deemed advisable to handle the dead poultry in the laboratory of the department nor to make experimental inoculations to diagnose a disease as infectious as European fowl pest.

The report of this outbreak was received by the bureau, June 24, 1929. The work of eradication commenced immediately and was completed in July of this fiscal year. The plan followed was to quarantine premises; arrange funds to indemnify owners for the loss of poultry condemned and equipment destroyed and to incinerate all infected and exposed poultry and equipment that could not be properly disinfected. After this work had been accomplished, the premises were kept open for a period of 30 days, after which susceptible birds were placed thereon. As no further evidence of the disease was found after ninety days had elapsed, the premises were released from quarantine and re-stocking permitted.

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REPORT OF WORK ACCOMPLISHED IN THE BUREAU
LABORATORY

FISCAL YEAR ENDING JUNE, 1930

Following is a summary of the work performed in the laboratory of the Bureau of Animal Industry in the control and eradication of Bang abortion diseases:

Number of blood samples received	16,812
Number of blood tests conducted	16,636*
Number of samples positive	1,521
Number of samples highly suspicious	498
Number of samples slightly suspicious	1,578
Number of samples hemolyzed	80
Number of samples insufficient sera	7
Number of samples negative	12,952

*This figure does not include the rapid tests made.

TESTING OF MILK SAMPLES FOR PRESENCE OF AGGLUTININS
FOR A. ABORTUS (BANG DISEASE)

Number of milk samples received	7,455
Number of milk samples tested	7,455
Number of samples positive	1,424
Number of samples suspicious	468
Number of samples negative	5,563
Number of cows tested	1,833
Number of cows negative	1,338

TESTING OF BLOOD SAMPLES FOR PRESENCE OF PULLORUM
DISEASE IN POULTRY

Number of tests conducted	127,935
Number of samples positive	8,129—6.4%

EXAMINATION FOR POTENCY

<i>Animal</i>	<i>Number</i>	<i>Material</i>	<i>Diagnosis</i>
Equine	1	Semen	Impotent
Bovine	2	Semen	Impotent

MICROSCOPIC EXAMINATIONS MADE

<i>Material</i>	<i>Animal</i>	<i>Number</i>	<i>Condition Suspected</i>	<i>Finding</i>
Feces	Bovine	1	Johne's disease	Johne's bacilli
Feces	Avian	1	Coccidia	Eimeria Avium
Feces	Avian	1	Parasites	Negative
Liver	Bovine	1	Tuberculosis	Negative
Lung	Bovine	1	Tuberculosis	Negative
Lung	Bovine	2	Tuberculosis	Tuberculosis
Lymph Gland	Bovine	11	Tuberculosis	Tuberculosis
Lymph Gland	Bovine	4	Tuberculosis	Negative
Pus	Bovine	1	Tuberculosis	Negative
Skin	Bovine	4	Tuberculosis	Negative
Skin	Bovine	6	Tuberculosis	Tuberculosis
Spleen	Bovine	1	Anthrax	Negative

BACTERIOLOGICAL EXAMINATIONS MADE

<i>Material</i>	<i>Animal</i>	<i>Number</i>	<i>Condition Suspected</i>	<i>Finding</i>
Fetus	Bovine	1	Bang Disease	A. Abortus
Liver	Bovine	1	Anthrax	Negative
Muscle	Bovine	1	Anthrax or Blackleg	Malignant edema
Uterus	Bovine	4	A. Abortus	Negative
Spleen	Bovine	2	Anthrax	Negative

PATHOLOGICAL EXAMINATIONS

<i>Animal</i>	<i>Number</i>	<i>Condition Suspected</i>	<i>Finding</i>
Chicken	4	Unknown	Coccidiosis
Chicken	1	Unknown	Retention of leg in abdomen
Duck	1	Hemorrhagic Septicemia	S. Avicida
Bovine	1	Anthrax	Catarrhal enteritis
Chicken	3	Pullorum Disease	S. Pullorum
Chicken	5	Tuberculosis	Fox and parasitism
Chicken	4	Paralysis	Parasitism
Chicken	3	Cholera	Parasitism
Chicken	1	Unknown	Rupture of liver
Chicken	5	Faulty Feeding	Coccidiosis
Duck	1	Faulty Feeding	Cholera

Report of the Bureau of Markets

MARKET DEVELOPMENT

Marketing facilities in New Jersey for New Jersey produce developed definitely in the past year. Work in city marketing, started in past years, progress in market development at shipping points and aid from the bureau in the establishment of additional auction markets all combined to create profitable outlets for farm produce in a year when overproduction and low prices were very evident. The new markets proved most efficient as a means of supplying smaller consumer-centers, thus aiding efficient distribution to the benefit of producer and consumer alike.

The bureau's standardization work along all lines is aimed at developing grades of produce, including milk, eggs, vegetables or fruits, which will not only fill a demand on the part of the consumer, but force him to prefer and ask for New Jersey produce in preference to any other. This can only be accomplished by developing quality and also by obtaining through sales methods the absolute confidence of the mass of distributors, both wholesale and retail. Very often this has been found impossible to accomplish. New Jersey producers are located so near to their markets that it has been too easy to market inferior products at prices which have meant some returns to the grower. The bureau's work, however, has convinced many growers that better prices can be obtained when there is a will to cater to the needs of consumers and distributors.

In the past year the bureau of markets tried to coordinate its work with that of the Federal Farm Board. The New Jersey law, under which farmer-owned markets have been incorporated, has made it possible to conform to the requirements of the Capper-Volstead Act. The bureau is thus in a position to cooperate, if it should seem best, with the agencies of the Farm Board. But it has seemed best that it should do all possible to fortify New Jersey producers from an invasion of distant-grown produce. This can only be done by developing quality and salesmanship at home. Such an invasion may take place and New Jersey producers may lose advantages of position and marketing that they now have, if changes in present market methods make it possible for distant competing areas to overcome natural handicaps and control our eastern markets.

The bureau is cooperating with other agricultural agencies in the state in trying to convince growers that land which will not produce paying yields of quality crops should be put to other uses. Likewise, it is advocating no reduction in acreage as a means of farm relief to those farmers who have land suitable for crop production and who are financially and expertly equipped to grow a suitable crop. What the bureau fears most is competition from the man who has not the personal ability, the financial nor the natural means, but who may obtain financial aid to keep him in the producing game at a loss to himself and his backers. The bureau feels that a program of economical production and economical distribution based on studies of supply and demand will go a long way in relieving the present agricultural depression of the country.

MILK MARKETING

For the past three years, the dairy work of the bureau has been largely guided by the efforts of members of the New Jersey Milk Conference Board. This board, consisting of men who are leaders in both the production and the distribution of milk, has met twice during the year and put into definite form ideas on grades for milk to be sold in New Jersey. It was felt by this board that much information would have to be gathered before it would be practical to promulgate mandatory milk grades for New Jersey. The New Jersey State College of Agriculture has carried on an extensive survey of the dairy industry of the state and, at the request of the Milk Conference Board, made a report to that body. A summary of the report follows:

THE VOLUME OF MILK OR MILK EQUIVALENT SOLD WITHIN THE METROPOLITAN AREA OF NEW JERSEY AND THE PROPORTION WHICH IS PRODUCED IN NEW JERSEY

<i>Product</i>	<i>Total Sales in the Metropolitan Area 40-Quart Cans</i>	<i>Produced in New Jersey</i>	<i>Per Cent of Total Produced in New Jersey</i>
<i>Grade A Total</i>	1,833,692	1,331,195	71
Raw	444,796	444,796	100
Pasteurized	1,388,896	886,399	64
<i>Grade B Total</i>	6,004,457	2,463,266	41
Raw	625,628	625,628	100
Pasteurized	5,253,653	1,712,462	33
T. B. T.	125,176	125,176	100

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<i>Product</i>	<i>Total Sales in the Metropolitan Area 40-Quart Cans</i>	<i>Produced in New Jersey</i>	<i>Per Cent of Total Produced in New Jersey</i>
<i>Certified</i>	147,090	147,090	100
<i>Cream</i>	4,938,333	111,908	2
<i>Ice Cream</i>	2,989,423	341,573	11
<i>Totals</i>	15,912,995	4,395,032	28

From this information, it was deemed advisable that permissive rather than mandatory grades be set up for New Jersey, since too large a proportion of its total milk supply comes from outside the state.

A milk marketing agent was added to the staff of the Bureau of Markets, July 1, 1929, and served the department for the entire year. Also, on July 1, 1929, another dairy committee was brought into existence in the state. The New Jersey State Dairy Advisory Committee was organized then primarily as a means of direct contact between the department and producers of milk, representing every part of the state. The milk marketing agent of the bureau was made secretary of this organization.

The organization is composed of one representative from each milk-producing county of the state, appointed by the county board of agriculture, and representatives of four breed associations, the State Grange, the State Federation of County Boards of Agriculture, the New Jersey Agricultural College and Extension Service, and the Department of Agriculture. Because the department did not wish to have the value of this committee or the scope of its work limited, the name was changed to the "New Jersey State Dairy Committee." The organization has taken up several lines of work important to the dairymen of the state. In this report, only those phases of the work which pertain to marketing will be considered.

The State Dairy Committee accepted as a foundation for its marketing work the work of the New Jersey Milk Conference Board. In fact, several members of the board serve on the State Dairy Committee. Working together, the organizations drafted a code of milk grades for New Jersey. At first, it was intended that the State Department of Agriculture should promulgate these grades of milk, but, after an exchange of several conferences with the State Health Officers Association, it was deemed best that these grades be made a part of the sanitary code of the State Department of Health, in addition to the existing grade of certified milk found in that code. In order to meet the ideas of the municipal health officers, the grades were modified in

detail by a sub-committee representing the producers and the health officers. The grades are: New Jersey Grade A Raw, New Jersey Grade AA Pasteurized, Grade A Pasteurized, and Grade B Pasteurized.

The first two grades mentioned are of especial significance to New Jersey producers. They provide for milk that must satisfy rigid sanitary requirements and, moreover, must be produced in New Jersey and delivered to the consumer within 48 hours of its production. They both provide that the milk must be from tuberculin tested cows that have not reacted to the test.

The grades have been submitted to the State Board of Health for consideration. In the work, the department and the two dairy-men's organizations have had the wholehearted cooperation of Mr. W. W. Scofield, chief of the Bureau of Foods and Drugs of the State Department of Health.

GRADES OF MILK AS DELIVERED IN CITIES IN NEW JERSEY

	<i>Total Qts. Certified</i>	<i>Total Qts. Raw</i>	<i>Total Qts. "A" Past.</i>	<i>Total Qts. "B" Past.</i>
Jersey City.....	150	.....	14,000	120,000
Bayonne .....	.....	.....	4,200	27,516
Newark	2,681	15,738	42,459	183,274
Summit .....	.....	5,532	.....	.....
Millville .....	.....	1,700	750	1,550
Passaic	250	3,500	35,000	.....
Paterson	332	12,671	4,591	35,794
Englewood .....	.....	180	2,670	3,680
Trenton	205	3,465	1,400	50,210
Sea Island City .....	.....	150	.....	1,350
Rahway .....	.....	640	.....	4,500*
Perth Amboy	200	560	.....	23,795*
Ocean City .....	.....	.....	9,325	.....
New Brunswick .....	.....	1,200	.....	20,302*
Lambertville .....	.....	800	.....	.....
Hoboken .....	.....	.....	2,013	Not given
Elizabeth .....	.....	6,200	42,190	Not given
Corbin City .....	.....	30	45	.....
Midland Park .....	.....	.....	.....	2,000
Burlington .....	.....	1,290	2,420	.....
Long Branch .....	.....	637	5,304*	1,144
Clifton	183	7,000	.....	13,225*
Montclair	405	2,492	13,249	.....
Hackensack	15	.....	2,465	Not given
Atlantic City	190	490	18,489	33,963
Bloomfield .....	.....	4,111	4,578	3,937
Camden .....	.....	702	10,707	24,454
*The Oranges	875	613	39,282	17,621
Plainfield	620	2,787	3,948	8,130
Totals	6,106	72,488	259,085	576,445

* Denotes not classified as to "A" or "B."

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GRADES OF MILK AS DELIVERED IN BOROUGHES OR TOWNS
IN NEW JERSEY

	<i>Total Qts. Certified</i>	<i>Total Qts. Raw</i>	<i>Total Qts. "A" Past.</i>	<i>Total Qts. "B" Past.</i>
Morristown		7,680	.....	.....
Boonton		2,500	.....	.....
Irvington		3,719	16,682	Not given
Newton		1,575	.....	.....
Nutley		1,306	.....	5,753*
Dover		3,300	.....	.....
Palisades Park		35	519	Not given
Mountain Lakes		940	95	.....
Tenafly		55	757	.....
Brooklawn		133	211	168
Cresskill		7	290	.....
Englewood Cliffs		12	79	.....
Milford		306	.....	.....
Longport .....		.....	560	.....
Wrightstown		12	45	.....
Swedesboro		493	150	.....
Bergenfield		33	768	.....
Dumont	30	.....	676	.....
Little Ferry	9	.....	604	.....
Andover		85	.....	.....
Beechwood	8	.....	75	.....
Belmar .....		.....	172	.....
Bernardsville		1,273	.....	.....
Cranford		1,000	.....	2,000*
Elmer		400	100	.....
Franklin		521	768	.....
Freehold		200	1,800	.....
Frenchtown		300	.....	.....
Gibbsboro		150	.....	.....
Glen Ridge		222	2,157	.....
Glen Rock		625	475	.....
Jamesburg		215	320	.....
Lebanon		270	.....	.....
Matawan		610	167	.....
Newfield		130	120	.....
North Caldwell		155	205	27
Pine Beach .....		.....	10	.....
Pitman		600	1,100	.....
Prospect Park		1,525	235	475
Ridgefield Park	35	.....	1,087	.....
Riverton		600	500	.....
Rockleigh .....		.....	20	.....
Roseland		225	25	.....
Ship Bottom and Beach Arlington..		.....	12	36
South Bound Brook.....		100	500	.....
Tavistock		10	.....	.....

* Denotes not classified as to "A" or "B."

	<i>Total Qts. Certified</i>	<i>Total Qts. Raw</i>	<i>Total Qts. "A" Past.</i>	<i>Total Qts. "B" Past.</i>
Wharton		515	180	.....
North Plainfield		697	943	.....
Dunellen		420	1,300	.....
Red Bank		2,000	8,000	.....
North Arlington		377	300	.....
New Providence		350	.....	.....
Roselle		1,328	32,718	3,050
Totals	82	37,009	74,725	11,509

GRADES OF MILK AS DELIVERED IN TOWNSHIPS IN NEW JERSEY

	<i>Total Qts. Certified</i>	<i>Total Qts. Raw</i>	<i>Total Qts. "A" Past.</i>	<i>Total Qts. "B" Past.</i>
Bernards		2,000	.....	.....
Blairstown		230	.....	50
Clinton Township		100	.....	130
Cranbury		80	120	.....
Hamilton		340	2,300	.....
Denville		4,300	2,700	.....
Monroe		350	.....	.....
Moorestown Township		250	750	800
Neptune		480	160	.....
Princeton Township		80	.....	.....
Southampton		1,200	.....	.....
Teaneck	116	.....	1,634	.....
Union Township-Ocean Co.	3	170	23	.....
Washington-Bergen Co.		400	200	.....
Washington-Warren Co.		20	210	.....
Woodbridge		2,880	3,615	.....
Absecon .....		.....	85	.....
Hohokus Township		380	40	.....
Mansfield-Warren Co.		120	60	.....
Long Beach .....		.....	500	.....
Chesterfield		100	.....	.....
Fairfield		65	70	.....
Plainsboro .....		.....	130	.....
Morris Township		325	.....	.....
Milburn		1,670	833	.....
Hillside	75	484	1,540	3,029
Pensauken		100	1,777	.....
Shrewsbury		65	91	.....
North Bergen	295	405	2,392	15,844
Totals	489	16,594	19,230	19,853

The Bureau of Markets gave much of its time to the work of the Milk Conference Board and the State Dairy Committee. Many conferences were held and all of the work of these conferences, the compiling of data, investigations, and detailed work, fell on representatives of the bureau.

Among other investigations made by the milk marketing agent was a survey to determine the amount of milk of various kinds used in the municipalities of the state. The survey is not complete, but reports were secured from one hundred and eleven municipalities and are indicative of the classes of milk consumed in the state. The tables herewith presented give the results of this survey. For convenience, they have been divided according to cities, boroughs or towns, and townships.

In addition to the work of the State Dairy Committee, the milk marketing agent of the bureau spent much time with individual producers, endeavoring to secure better markets for them, especially where they had had their herds tuberculin tested and were otherwise producing a high grade of milk. This work was done under a severe handicap because, during almost the entire year, a milk surplus prevailed and distributors had ample supplies to draw on at all times. The milk marketing agent was, however, successful in this work and secured better markets or higher grade allotments in twenty-seven cases as follows: Burlington County, 1; Hunterdon County, 9; Mercer County, 2; Middlesex County, 3; Somerset County, 5; Sussex County, 5; and Warren County, 2.

The bureau had many and varied requests during the year made upon its milk marketing agent. He was often able to recommend adjustments in construction and apparatus and enable the producer to meet the requirements of the market.

The bureau cooperated closely with the Inter-State Milk Producers' Association and the Dairymen's League and other existing agencies. The representative of the bureau made 703 calls at farms over the state where problems in milk marketing had arisen. The distribution of these calls by counties is as follows:

Burlington	48
Cumberland	2
Gloucester	4
Hunterdon	180
Mercer	58
Middlesex	47
Monmouth	42
Morris	37
Salem	5
Somerset	95
Sussex	66
Union	54
Warren	65
Total.....	703

The bureau's milk marketing agent also made 55 visits to milk dealers with the object of bettering the market for milk produced in New Jersey.

POULTRY STANDARDIZATION AND MARKETING

The poultry work of the Bureau of Markets, in the fiscal year, continued along the lines of the past few years and, in addition, there developed a definite policy for egg marketing. This policy is based on studies made by members of the poultry staff for the past three years and covers the egg marketing work done in other states as well as in this state. In these studies, an attempt was made to pick out methods and practices which are applicable to New Jersey's conditions. No plan is suitable for universal use in the state, but, according to the bureau's policy, each section can use the plans that have merit in connection with its present methods.

For several years, the bureau has been cooperating with poultry producers in the sale of classified hatching eggs, baby chicks and breeding stock and using as a means to this end, all of the publicity available. The bureau publishes in its *Weekly Market Review* a list of supplies available throughout the state, together with the price quotations assembled from the various breeders. In addition to this, a list of individual supplies and prices for the guidance of prospective buyers in different localities is published in an annual circular. On direct request, the bureau has supplied information relative to flocks to prospective buyers for classified stock. Enlarging on this policy, with the cooperation of the poultry producers in the various areas of the state and after a complete study of the marketing systems referred to already, the bureau is recommending this marketing policy as best fitted to the needs of New Jersey's poultry producers.

The four main points which are vital in any comprehensive marketing system for the state are, first, the establishment of a quotation for New Jersey poultry products on the basis of supply and demand; second, the establishment of a means of protection in the payment for eggs to our poultry producers; third, the establishment of better grading practices, and, fourth, the protection of New Jersey producers from unscrupulous dealings in eggs originating outside of the state and sold on the wholesale markets as New Jersey eggs to the detriment of New Jersey products.

To establish quotations for New Jersey products, the bureau has recommended the use of producers' auction markets at two points in

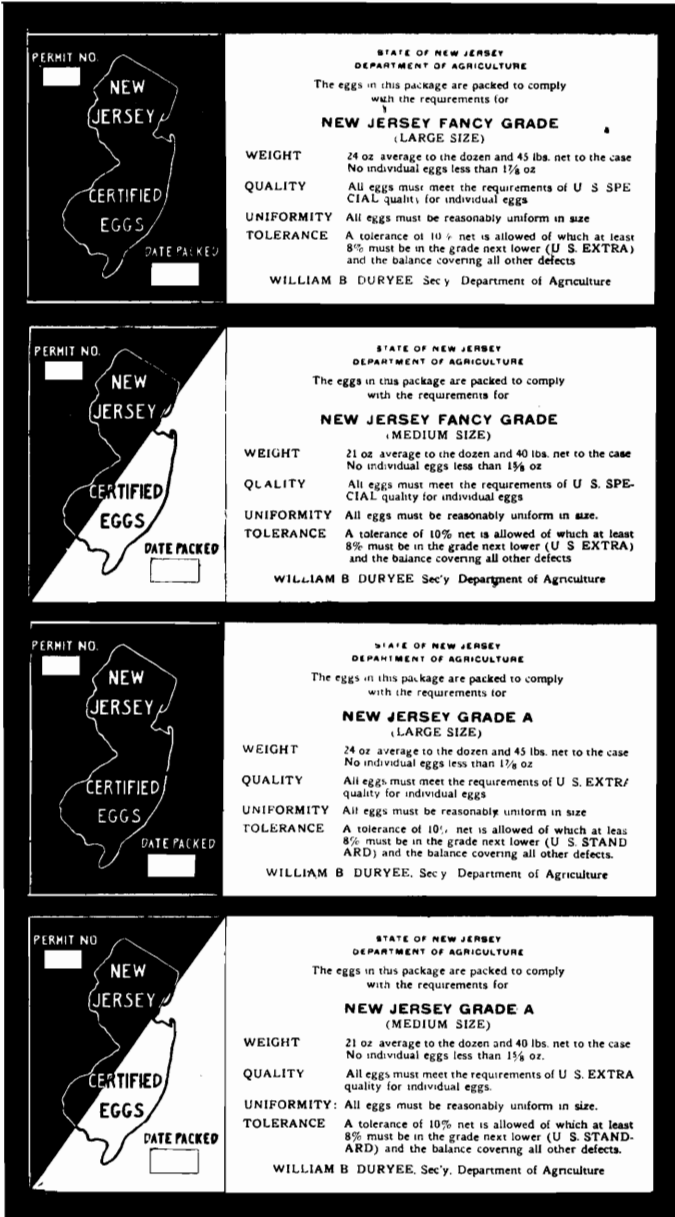


FIG. 5

Labels of the Department of Agriculture used on crates of eggs that comply with the requirements of the four state grades of eggs.

the state. To protect the cash return to the producer, it has recommended that these auctions be operated on a basis of cash sales at the auction market. At these markets, the producer can see the difference between his own and his neighbor's prices and realize the high market value of eggs that are packed and graded properly. The bureau has recommended the establishment of a central grading point at one of the auctions to perform services of grading on a uniform basis for all producers. It has recommended that each auction be operated by a producers' cooperative association. For the fourth point, that of protecting the good-will of New Jersey products, it has recommended the use of permissive state grades and state labels designating these grades.

Auction markets have been recommended for only two points in New Jersey, the first one at Toms River and the second one at Flemington. The use of the labels and standard grades are recommended for the southern New Jersey territory.

Because of long-established custom in the commercial area of Toms River and vicinity in the matter of grading, it was proposed that, at the Toms River Auction Market, products be sold on the basis of the customary system of grading. In the Flemington area, however, a central grading plant and the use of permissive state grades was advocated. In the Vineland tract, where large cooperative organizations are responsible for a splendid marketing system, the department offered its services and assisted in the use of standard grades protected by a state label to protect the good-will already established for the products of that section. Figure 5 illustrates the grades and their requirements.

The Toms River auction market was organized on May 9 and started operations on June 2. It operated through the month of June with its prices approximately three to five cents a dozen net above those received on the New York market. The Flemington auction market was in the process of organization at the end of the fiscal year and was scheduled to open soon. A number of large cooperative associations in southern New Jersey now have committees at work on the use of the standard grades and state label to protect their good-will.

If this system can be completed as recommended in these three sections, it is our belief that the cooperative associations could combine and offer for sale through a single agency a total volume or surplus of eggs and poultry products to good advantage on the large wholesale markets of the East and, at the same time, continue to supply local demand with local products at a considerable increase in price over what is being received now through local channels.

In accordance with this policy and in cooperation with the New Jersey Extension Service, the bureau is cooperating with the producers of Burlington County and vicinity in the establishment of an auction market for poultry meat. This project is under consideration and study by committees and, if feasible, probably will be placed in operation in the 1930-31 fiscal year.

If the system outlined is placed in operation, it will be necessary for the department to make inspections of the various products being shipped under state labels to guarantee the fulfillment of the rules and regulations covering such labels.

POULTRY STANDARDIZATION

Poultry standardization work increased 21 per cent since the year ending June, 1929, and, from reports, all cooperators were well satisfied with the work, particularly with the use of inspection crews, each of which included an inspector and a bleeder, and with the method of handling blood samples advocated and followed by the Bureau of Animal Industry. This system gave the department an opportunity to make blood tests for pullorum disease and return the reports of reactors to cooperators much more rapidly than was possible in the past.

There were 133 applications for certification and approval for the 1929-30 season. These applications covered 253 flocks, of 154,895 birds, of which 30,478, or 19.6 per cent, were rejected at time of inspection for standard disqualifications or production defects. A total of 116,810 birds passed the inspection and testing. Of this number, 59,633 were in the "Supervised" class; 38,416 "Certified"; 4,753 "Supervised-Accredited"; 1,618 "Certified Meat Production," and 12,390 "Approved Meat Production." There was an increase of 26,200 birds inspected since the year ending June, 1929, and an increase of applicants from 126 to 133. Seven thousand six hundred and seven or 6.1 per cent of the birds passing inspection were bacillary white diarrhea reactors and were removed from the flocks.

Of the 253 flocks inspected and blood tested, 36 contained less than 200 birds; 37 between 200 and 500; 24 from 500 to 1,000; 34 from 1,000 to 5,000 (including 20 hatchery out-flocks listed as one flock); 1 from 5,000 to 10,000 (including 18 hatchery out-flocks listed as one flock); and 1 more than 10,000 (including 82 hatchery out-flocks listed as one flock). There were 12 certified meat production flocks (Black Giants) in Middlesex, Burlington and Mercer counties; and

25 approved meat production flocks distributed among Burlington, Gloucester and Salem counties.

Single Comb White Leghorns led the single breed total of birds inspected with 120,683, followed by Approved Meat Production with 17,699; Barded Plymouth Rocks, 7,012; Rhode Island Reds, 4,672; Certified Meat Production, 2,468; White Plymouth Rocks, 1,208; White Wyandottes, 878; Black Minorcas, 168; White Orpingtons, 99; and Buff Orpingtons, 8.

The following table shows the distribution of flocks by counties and also the number of birds inspected in each county. Note also the distribution in Figure 6.

<i>County</i>	<i>Number of Flocks</i>	<i>Number of Birds Inspected</i>
Atlantic	6	2,022
Bergen	5	5,851
Burlington	37	12,397
Camden	1	746
Cumberland	66	41,589
Essex	6	5,408
Gloucester	7	10,428
Hunterdon	15	11,256
Mercer	21	9,806
Middlesex	7	11,746
Monmouth	10	8,211
Morris	3	943
Ocean	2	3,754
Passaic	9	11,051
Salem	30	4,644
Somerset	20	12,144
Sussex	5	1,854
Union	1	107
Warren	2	938
Totals	253	154,895

The certification work for the 1929-30 season was divided into work among flocks with less than 200 birds and work among those with 200 or more. The inspection of the small flocks required a total of thirteen and one-half days' work by department representatives, who inspected 4,345 birds and rejected 531. Of the birds that passed inspection, 1,025 were "Supervised"; 59 "Certified"; 658 "Certified Meat Production," and 1,917 "Approved Meat Production" (733 reactors). There were 155 birds "Supervised-Accredited." The work was done on a flat rate basis of ten cents per bird handled.

The inspection of flocks of 200 or more birds required a total of 267 days' work. In conjunction with the work, 150,550 birds were inspected; 29,947 rejected; 61,067 classed as "Supervised"; 39,318

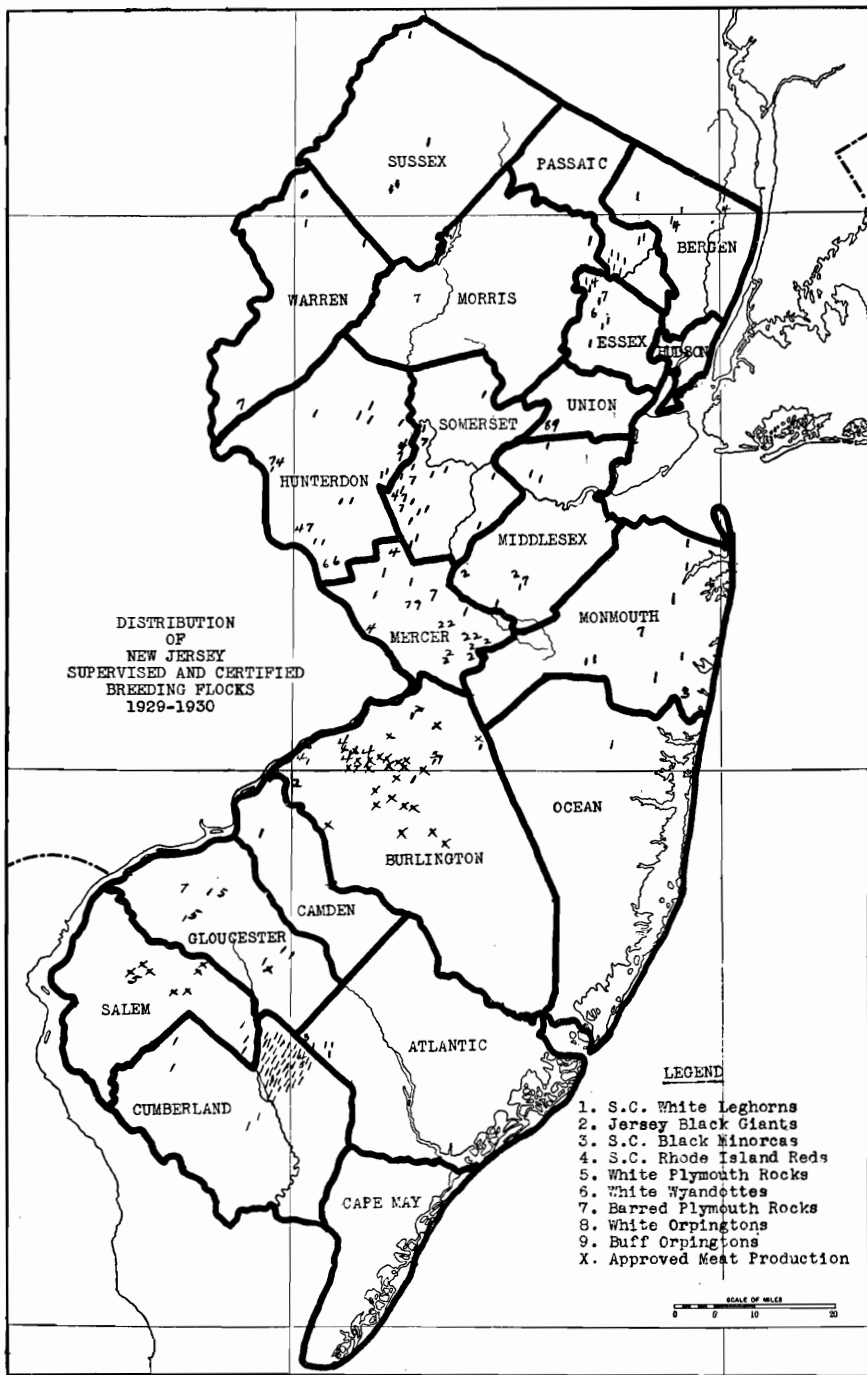


FIG. 6

"Certified"; 4,753 "Supervised-Accredited"; 1,297 "Certified Meat Production," and 14,168 "Approved Meat Production" (6,874 reactors).

The chart showing distribution of hatcheries indicates that 70 breeder-hatcheries, having a total capacity of 1,295,267 eggs, were receiving their total egg supply from flocks under state supervision and eight commercial hatcheries with capacities of 426,000 were receiving eggs from at least one breed under supervision. The total capacity of this group, alone, is 1,721,267.

The further distribution of the flock inspection service can be realized by noting the increase in flocks in the various counties. Inspections were made in 19 counties, the same number as in the previous year, but many notable increases occurred within the counties. Flocks were inspected in three grades as outlined in Circular No. 114, published in 1927, and in accordance with the rules and regulations of 1928. The divisions by grades are shown in the four tables.

The cost of inspection work for the past year was made on the basis of crew inspections. For each crew, a total of \$15.00 a day was charged for labor, maintenance and transportation. The laboratory fee was reduced to one cent for each tube of blood tested. All collections were made by the Bureau of Markets.

As shown by the following tables, there was a saving of 1.7 cents per bird over the previous year. By going over these tables carefully, one can see readily that it is somewhat more efficient to handle a large flock than a small flock. For that reason there is a flat rate charge on small flocks. The average cost per bird passed, inspection only, was .037 cents. Flocks in their different units are as follows:

0-200	\$0.065
200-500 .....	.035
500-1,000 .....	.033
1,000-1,500 .....	.031
1,500-2,000 .....	.027
2,000-Up .....	.026

The average cost per bird passed, including all Bureau of Animal Industry charges, was .063 cents. Flocks in their different units are as follows:

0-200	\$0.099
200-500 .....	.058
500-1,000 .....	.057
1,000-1,500 .....	.052
1,500-2,000 .....	.047
2,000-Up .....	.046

For the 1928-29 season the average cost per bird passed, inspection only, was four cents. Flocks in their different units are as follows :

0-200	\$0.08
200-500 .....	.044
500-1,000 .....	.038
1,000-1,500 .....	.033
1,500-2,000 .....	.029
2,000-Up .....	.029

The average cost per bird passed, including laboratory fee (1928-29), was eight cents. Flocks in their different units are as follows :

0-200	\$0.12
200-500 .....	.084
500-1,000 .....	.078
1,000-1,500 .....	.073
1,500-2,000 .....	.069
2,000-Up .....	.069

Receipts collected for both inspection and blood testing totaled \$7,880.54 and the disbursements totaled \$8,157.80. The resulting deficit was \$277.26. However, this deficit is covered by the number of leg bands, which the bureau has on hand and which will be used next year.

Representatives of the bureau made a total of 540 sanitary inspections of poultry flocks in the year. These inspections were made each month on all breeding flocks and hatcheries and the condition of the flocks, the sanitary conditions of the premises and the size of the eggs incubated checked. Supervision of this work and systematic inspection of flocks and hatcheries are required by law to protect the certificates issued by the Department of Agriculture and, consequently, the work is done by authorized agents of the Department of Agriculture.

At the annual meeting of certified breeders, May 22, a request was made for a change in classification to permit the inspection of lighter breeds on the basis used in the inspection of heavier breeds in the "Approved" classification. This request was unanimous on the part of the assembled group of cooperators, and, in accordance with their wishes, the rules will be submitted to the State Board of Agriculture for approval. In order that there will be no misunderstanding concerning this classification it is listed as follows :

APPROVED BREEDING FLOCKS

(As Substituted for Page 83 in Circular No. 174)

In order to facilitate the eradication of bacillary white diarrhea in New Jersey and at the specific request of persons engaged in the production of poultry meat and eggs, from cross-bred flocks, for assistance in the production of better and healthier meat-carrying and egg-producing fowl, without regard to standard qualities in individuals, the "Approved Breeding Flock" is established.

Authority for conducting this work is granted by certain provisions of Chapter 83, Laws of 1921, State of New Jersey, authorizing the Department of Agriculture to establish and promulgate standards for farm products.

(A) *Approved Meat Production Flocks***STANDARDS**

- (a) Inspection and standards for the "New Jersey Approved Meat Production Flocks" will be based on the meat-carrying capacity of individual birds, regardless of breed and varietal differences.
- (b) Each bird shall be vigorous and healthy at the time of inspection. If disease should develop during the breeding, the affected birds must be immediately removed from the breeding flock.
- (c) Each bird shall be tested for bacillary white diarrhea and all reactors must be removed from the premises immediately on notification from this office.
- (d) Where possible, purebred males of the desired breed should be used.

NOTE.—All other regulations are the same as for standard classes.

(B) *Approved Egg Production Flocks*

On account of the present objection by breeders of high producing egg-laying strains to having their birds rejected on account of standard disqualifications, and on their demand for more widespread application of the bacillary white diarrhea test, this classification has been originated. No attention will be paid to any standard disqualifications in this class, but each bird will be tested for bacillary white diarrhea and all reactors removed. All other regulations regarding the production of hatching eggs, etc., are the same as for all other classes. General regulations apply to all classes in the standardization program.

STANDARDS

- (a) Inspection and standards for the "New Jersey Approved Egg Production Flocks" will be based on the egg-laying capacity of individual females as determined by a physical selection of individuals regardless of standard requirements or breed and varietal differences.
- (b) Each bird shall be vigorous and healthy at the time of inspection and should be at least standard weight for the predominating breed and variety in the flock. If disease should develop during the breeding season the affected birds must be immediately removed from the breeding flocks.
- (c) Each bird shall be tested for bacillary white diarrhea (pullorum disease) and all reactors disposed of as directed by the Department of Agriculture immediately on notification.
- (d) Where possible, purebred males of the desired breed should be used.

(C) Certified Meat Production Flocks

On account of the persistent demand for a Certified Meat Production Class in our standardization plan by the Black Giant breeders of the state and the apparent justice of their claims that straight meat breeds cannot be forced for egg production without sacrificing their natural purpose, that of meat production, we have added this class to our present standardization plan.

STANDARDS

- (a) Inspection and standards for the "New Jersey Certified Meat Production Flocks" will be based on the American Standard of Perfection and will be limited to purebred flocks of the straight meat breeds as Orpingtons, Cornish, Jersey Black Giants, etc. No weight tolerance in excess of the stated allowance will be granted in any case. No specific egg production is required in any case.
- (b) General regulations governing all standard classes will apply in full to "Certified Meat Production Flocks."

RECORD OF PERFORMANCE

Eighteen poultrymen, with a total of 7,232 birds, entered the record of performance trapnest project this year. Birds are entered for the purpose of making official records and should not be confused with breeding hens which already have made the records in accordance with the rules and regulations governing the "Record of Performance" class. Thirty breeders entered 105 "Record of Performance" breeding flocks containing 1,442 breeding females. Mating lists for these flocks are included in Circular No. 174, which has been published by the department. These flocks are made up entirely of females whose production has been certified by the contest management through their contests or home record of performance projects, together with all those individuals which have made their record in accordance with the rules and regulations governing the trapnest project in this state and which have been certified by this department. Of these 105 flocks, 99 were Leghorns, one Barred Plymouth Rock, four Rhode Island Reds, and one White Plymouth Rock. One hundred and four were "Certified," and one "Certified-Accredited." They were distributed by counties as follows:

County	Total No.	FLOCKS			
		S. C. White Leghorns	Barred Rocks	R. I. Reds	White Rocks
Bergen	9	9	..	..	..
Burlington	8	7	1	..	..
Camden	2	2	..	..	..
Cumberland	15	13	..	1	1
Essex	1	1	..	..	..
Gloucester	9	9	..	..	..
Hunterdon	12	9	..	3	..
Mercer	4	4	..	..	..
Middlesex	17	17	..	..	..
Monmouth	1	1	..	..	..
Ocean	1	1	..	..	..
Passaic	21	21	..	..	..
Somerset	3	3	..	..	..
Sussex	2	2	..	..	..
Totals	105	99	1	4	1

All of these flocks were single mated and the progeny hatched under the supervision of this department. Such male progeny is qualified after inspection to head "Certified" and "Record of Performance" breeding flocks in accordance with the production standard in each case. The records show a total of 1,442 females which produced

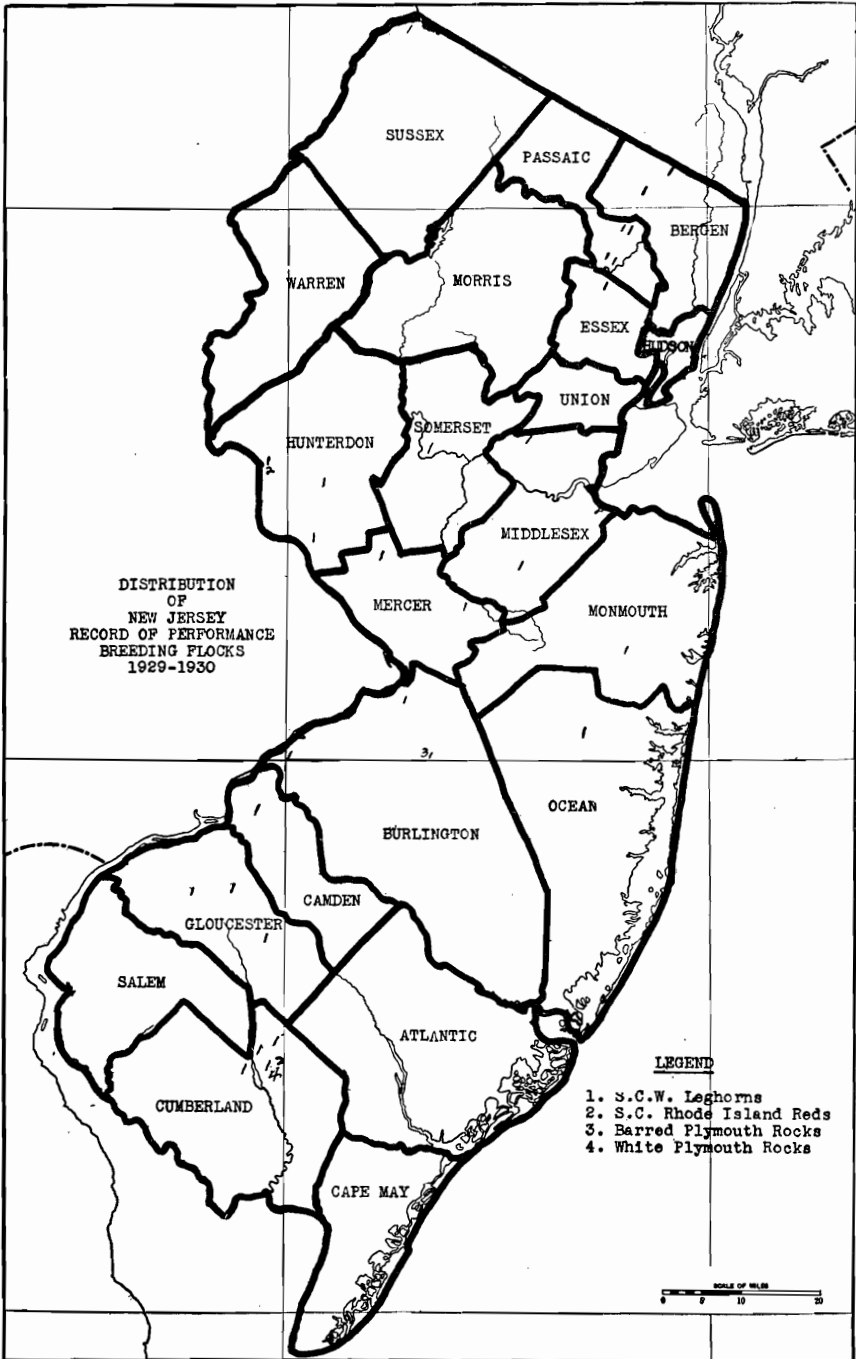


FIG. 7

71,582 eggs, of which 53,013 were incubated to produce 31,720 chicks. Of this progeny, many of the females will be entered in the "Record of Performance" trapnest project for official record and progeny test by flock owners. The males will be used on "Certified" and "Record of Performance" flocks for the present season.

The following table is taken from our records and shows the number of "Record of Performance" chicks produced for the past year. Our state distribution of these flocks continues to be about the same, although there is some slight change from year to year.

SUMMARY OF 1930 RECORD OF PERFORMANCE BREEDING FLOCKS

<i>County</i>	<i>No. of Flocks</i>	<i>No. of Birds</i>	<i>No. of Eggs Produced</i>	<i>No. of Eggs Set</i>	<i>No. of Chicks Hatched</i>
Bergen	9	124	6,410	4,610	3,267
Burlington	8	123	9,604	6,140	3,481
Camden	2	29	1,721	801	438
Cumberland	15	207	9,153	5,987	3,348
Essex	1	15	788	762	457
Gloucester	9	116	7,073	4,925	3,238
Hunterdon	12	152	4,091	3,793	1,980
Mercer	4	66	4,988	4,013	2,377
Middlesex	17	271	11,625	8,036	4,996
Monmouth	1	10	413	398	224
Ocean	1	11	378	367	305
Passaic	21	249	11,714	9,986	5,609
Somerset	3	39	2,107	1,905	1,183
Sussex	2	30	1,517	1,290	817
Totals	105	1,442	71,582	53,013	31,720

In addition to the project work as outlined, there were many demands made upon the bureau for services. Members of the staff made 31 addresses on the subject of poultry marketing and standardization and attended many meetings. Ten exhibits showing grading of eggs and the standardization of flocks were erected during the year. A total of 21 egg grading demonstrations were given. Ten of them were given before vocational agricultural classes at the request of the teachers. Approximately 1,775 persons attended the demonstrations.

The bureau has continued its policy of investigating complaints about chicks in the standard classifications and has made recommendations leading to satisfactory adjustments between buyer and seller. It is gratifying that there were but three such complaints brought to the attention of this office during the past year.

The baby chick show was again one of the leading features of Agricultural Week and we are now prepared to have even a larger baby

chick show for 1931. We believe this will be possible, since the date for Agricultural Week is two weeks later than formerly, January 27 to 30, inclusive. Most of our poultry producers will have an opportunity to have their flocks mated and chicks hatched for this feature. The entry fee has also been reduced to \$5.00 per entry with the chicks becoming the property of the show to help defray expenses. We also had a splendid egg show during Agricultural Week and are preparing for even a larger one for the year 1931.

The annual report of all standard breeding flocks under supervision, including the "Record of Performance" trapnest project flocks and the mating lists of the "Record of Performance" breeding flocks, was published in Circular No. 174 and has been distributed to more than 2,500 different residences in New Jersey. Many requests for copies came from persons in other states.

The bureau has continued its policy of monthly inspection of breeding flocks in all of the standard classes and of operating two three-day weighing periods advocated by our poultry producers in the trapnest project, one in February and the other in September. These three-day weighing periods are followed in each instance by four consecutive days of egg weights taken by the individual breeders. These seven consecutive days in February and September are the basis for the average egg weight for each individual in the "Record of Performance" trapnest project. In addition to these regular inspections and in connection with this work, we also made a total of 857 farm visits.

CAPACITY OF HATCHERIES UNDER STATE SUPERVISION, YEAR ENDING JUNE, 1930

County	Breeder Hatcheries Under 5,000	Breeder Hatcheries 5,000 to 15,000	Breeder Hatcheries 15,000 to 50,000	Breeder Hatcheries Over 50,000 Capacity	Total Capacity of Breeder Hatcheries	Commercial Hatcheries		Total Hatchery Capacities
						Number	Capacity	
Atlantic	3	..	..	..	6,700	..	.....	6,700
Bergen	1	1	2	..	45,552	..	.....	45,552
Burlington	3	2	..	1	125,506	..	.....	125,506
Camden	1	..	..	..	4,320	..	.....	4,320
Cumberland	5	2	..	..	20,538	1	222,000	242,538
Essex	2	1	2	..	68,984	..	.....	68,984
Gloucester	3	3	1	..	65,260	..	.....	65,260
Hunterdon	2	1	1	2	698,925	2	45,000	743,925
Mercer	2	2	..	..	25,470	..	.....	25,470
Middlesex .....	..	1	2	..	41,000	2	56,000	97,000
Monmouth	4	2	1	..	51,436	..	.....	51,436
Morris	1	..	..	..	800	..	.....	800
Ocean .....	..	2	..	..	15,912	..	.....	15,912
Passaic .....	..	3	1	..	50,544	1	25,000	75,544
Salem	3	..	..	..	2,470	..	.....	2,470
Somerset	1	2	..	..	13,600	2	78,000	91,600
Sussex .....	..	1	1	..	56,000	..	.....	56,000
Union	1	..	..	..	1,250	..	.....	1,250
Warren	1	..	..	..	1,000	..	.....	1,000
Totals.....	33	23	11	3	1,295,267	8	426,000	1,721,267

NUMBER OF BIRDS INSPECTED, YEAR ENDING JUNE, 1930

County	<i>Flocks Applied For and Inspected</i>	<i>S. C. White Leghorns</i>	<i>White Wyandottes</i>	<i>R. I. Reds</i>	<i>Barred Rocks</i>	<i>White Rocks</i>	<i>Black Minorcas</i>	<i>White Orp.</i>	<i>Buff. Orp.</i>	<i>A. M. P.</i>	<i>C. M. P.</i>	<i>Total Birds</i>
Atlantic	6	1,765	...	117	...	...	140	...	...	...	...	2,022
Bergen	5	5,631	...	220	...	...	...	...	...	...	...	5,851
Burlington	37	4,924	...	1,363	393	183	...	...	...	5,124	410	12,397
Camden	1	746	...	...	...	...	...	...	...	...	...	746
Cumberland	66	30,961	...	176	...	10	...	...	...	10,442	...	41,589
Essex	6	4,857	73	196	282	...	...	...	...	...	...	5,408
Gloucester	7	9,178	156	...	317	635	...	...	...	142	...	10,428
Hunterdon	15	7,870	649	1,766	971	...	...	...	...	...	...	11,256
Mercer	21	7,076	...	372	386	...	...	...	...	...	1,972	9,806
Middlesex	7	10,798	...	...	862	...	...	...	...	...	86	11,746
Monmouth	10	7,739	...	...	444	...	28	...	...	...	...	8,211
Morris	3	707	...	...	236	...	...	...	...	...	...	943
Ocean	2	3,754	...	...	...	...	...	...	...	...	...	3,754
Passaic	9	11,051	...	...	...	...	...	...	...	...	...	11,051
Salem	30	2,273	...	...	...	380	...	...	...	1,991	...	4,644
Somerset	20	9,329	...	462	2,353	...	...	...	...	...	...	12,144
Sussex	5	1,854	...	...	...	...	...	...	...	...	...	1,854
Union	1	...	...	...	...	...	...	99	8	...	...	107
Warren	2	170	768	938
Totals	253	120,683	878	4,672	7,012	1,208	168	99	8	17,699	2,468	154,895

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NUMBER OF BIRDS REJECTED, YEAR ENDING JUNE, 1930

<i>County</i>	<i>S. C. White Leghorns</i>	<i>White Wyandottes</i>	<i>R. I. Reds</i>	<i>Barred Rocks</i>	<i>White Rocks</i>	<i>Black Minorcas</i>	<i>White Orp.</i>	<i>Approved Meat Production</i>	<i>Certified Meat Production</i>	<i>Total Culls</i>
Atlantic	571	...	43	...	...	15	...	...	...	629
Bergen	1,139	...	89	...	...	...	...	...	...	1,228
Burlington	719	...	516	77	...	...	...	340	61	1,713
Camden	81	...	...	...	...	...	...	...	...	81
Cumberland	7,025	...	16	...	...	...	...	339	...	7,380
Essex	1,186	19	50	13	...	...	...	...	...	1,268
Gloucester	1,661	20	...	105	135	...	...	20	...	1,941
Hunterdon	1,874	151	509	299	...	...	...	...	...	2,833
Mercer	1,575	...	71	229	...	...	...	...	485	2,360
Middlesex	1,513	...	...	240	...	...	...	...	9	1,762
Monmouth	1,383	...	...	78	...	7	...	...	...	1,468
Morris	127	...	...	58	...	...	...	...	...	185
Ocean	1,179	...	...	...	...	...	...	...	...	1,179
Passaic	2,136	...	...	...	...	...	...	...	...	2,136
Salem	507	...	...	...	162	...	...	721	...	1,390
Somerset	1,980	...	57	464	...	...	...	...	...	2,501
Sussex	308	...	...	...	...	...	...	...	...	308
Union .....	...	...	...	...	...	...	3	...	...	3
Warren	20	...	...	93	...	...	...	...	...	113
Totals	24,984	190	1,351	1,656	297	22	3	1,420	555	30,478

NUMBER OF BACILLARY WHITE DIARRHEA REACTORS, YEAR ENDING JUNE, 1930

<i>County</i>	<i>S. C. W. L.</i>	<i>W. W.</i>	<i>S. C. R. I. R.</i>	<i>B. P. R.</i>	<i>W. P. R.</i>	<i>W. Orp.</i>	<i>A. M. P.</i>	<i>C. M. P.</i>	<i>Total</i>
Atlantic	143	...	41	...	...	...	...	...	184
Bergen	220	...	8	...	...	...	...	...	228
Burlington	98	...	31	19	7	...	976	19	1,150
Camden	9	...	...	...	...	...	...	...	9
Cumberland	578	...	1	...	...	...	1,227	...	1,806
Essex	132	7	...	21	...	...	...	...	160
Gloucester	230	6	...	10	35	...	4	...	285
Hunterdon	135	6	36	29	...	...	6	...	212
Mercer	147	...	...	37	...	...	...	314	498
Middlesex	307	...	...	18	...	...	...	9	334
Monmouth	165	...	...	39	...	...	...	...	204
Morris	7	...	...	40	...	...	...	...	47
Ocean	55	...	...	...	...	...	...	...	55
Passaic	335	...	...	...	...	...	...	...	335
Salem	50	...	...	...	97	...	1,459	...	1,606
Somerset	163	...	5	105	...	...	...	...	273
Sussex	125	...	...	...	...	...	...	...	125
Union .....	...	...	...	...	...	5	...	...	5
Warren .....	...	...	...	91	...	...	...	...	91
Totals	2,899	19	122	409	139	5	3,672	342	7,607

MARKET NEWS

The market news service of the bureau has been in operation for ten years. In the decade, various revisions and improvements were made in the service to make it more efficient and applicable to New Jersey conditions. The present organization is thought to be the most practical and economical for existing conditions, but changing marketing practices will, no doubt, mean that the service will undergo slight revisions from time to time in the near future. These adjustments must be made in order that we may be of value to the farmer.

The program of work of the market news service in the past year was carried on with the object of furnishing the farmer with timely and unbiased information and of supplying him with economic information concerning conditions in competing areas.

Two developments took place in the work in the past year. The first of these was the publication of a circular, in which the purpose and value of the market news service of the department was set forth. This circular was written in order that the service might be better understood and more intelligently used by the average producer. The publication, Circular No. 187, is entitled "Knowing Market Conditions Before We Sell."

The second development was in the nature of an experiment and consisted of an attempt to ascertain shipments of fruits and vegetables for the New York market by motor truck by obtaining from the leading trucking companies at shipping points the number of packages loaded for that market. The report can best be likened to the "passings" report on rail movement. This work was carried on in cooperation with the United States Bureau of Agricultural Economics and the Extension Service of the New Jersey Agricultural College

While the results of the work were not entirely satisfactory, because of complications in the method of collecting the material, the work itself revealed the necessity of working out some method in the near future of obtaining this type of information. The importance of the truck as a carrier of produce in this state is known to everyone. Since the inception of trucking, shippers and dealers have been uncertain about the amount of produce going to our nearby markets, or about the amount leaving our chief producing sections daily. The lack of such information has meant an unstable market, with severe losses to many farmers. The solution of this problem is worthy of a considerable amount of experimental study during the next few years.

DAILY MARKET REPORTING

The proximity of New Jersey's producing areas to their largest markets makes the work of our market news service much different from that of states more distant from market. The United States Department of Agriculture has market news offices at both New York and Philadelphia and it has been the bureau's policy to make use of these offices in collecting and distributing market information. A policy of cooperation between the state department and the federal department was continued this past year. No change took place in the cooperative work personnel in the year. This was very fortunate, for the employment and transfer of these men is under the jurisdiction of the United States Bureau of Agricultural Economics. Familiarity with New Jersey conditions is an important asset for this work, and with the man at Newark having been there for three years, the man at Philadelphia the same number of years, and the man at New York returning for a year after spending some time in field stations, the type of work turned out this past year was highly satisfactory.

The chief medium for distributing daily market reports continued to be the newspaper. This is the most economical method of distribution under the present plan of work. Fourteen daily papers of the state carried the market reports during the past year and, in addition, the leading newspapers of Philadelphia carried reports on nearby produce not only for the Philadelphia market but also for Newark and New York.

Radio broadcasting of market information was carried on throughout the year with practically no changes. There is an opportunity for considerable improvement in the radio work. The large radio station chains, which were formed by the merger of several small stations, have not been so willing to cooperate in it as the small ones were. National news is what they desire and local information has very little chance of being broadcast unless it is of general interest to the public. Only one large chain station in New York is now broadcasting market news reports. The reports it uses are general summaries of daily markets, very similar in nature to the daily stock market broadcasts. One small station in Newark is carrying our report, while another small station in Elizabeth is also broadcasting the daily Newark and New York market reports on New Jersey produce. One Philadelphia station broadcasts market information on nearby produce. This report is put on the air in cooperation with the Pennsylvania Department of Agriculture. The Atlantic City station carries a daily broadcast of that market.

WEEKLY MARKET SUMMARIES

The "Market Conditions" reports continue to be the main part of the market news service. Requests for these reports continue to reach the office without any solicitation and the mailing list contains the names of the most successful fruit and vegetable growers of the state. On June 30, 1930, there were 3,704 names on the mailing list for these reports. This is approximately the same number as last year. The reports issued in the year totaled 191. These included 35 on apples, 30 on sweet potatoes, 25 on white potatoes, 19 on lettuce, 15 on spinach, 13 on peaches, 13 on strawberries, 12 on asparagus, seven on onions, six on tomatoes and 16 on miscellaneous truck crops.

The chief purpose of these reports, as stated before, is to keep the grower informed as to conditions in competing production areas as well as in the most important markets. During the past year, a considerable amount of correspondence was carried on with shippers and state officials of other areas and contacts with members of the trade in various markets were made and maintained. A considerable amount of travel was necessary to keep in touch with crop and market conditions. In addition to the work in connection with the publication of these reports, some time was spent in collecting under one cover all the information available concerning each one of the crops on which we issue a "Market Conditions" report. Studies were completed for four of the crops and it is hoped that, for the remaining crops, they will be completed early in the year ending June 1931. The availability of this material makes the work of collecting it in one form very valuable and a great asset when hurried calls are made to the office for information.

The "Weekly Market Review" was issued regularly each Thursday throughout the year with only minor changes, which were mainly seasonal in character. As in former years, it included an analysis of the grain and feed markets together with quotations for ingredients at several receiving stations within the state. In addition, it included short reviews and quotations on hay and straw at New York and Philadelphia as well as live and dressed poultry prices at New York, egg prices at New York, and fruit and vegetable quotations at New York, Newark and Philadelphia. The special service to the poultrymen of the state, consisting of a report showing estimates on the monthly surplus and asking prices for baby chicks and hatching eggs from certified flocks, was published from January until the end of the hatching season. From June until the beginning of September, figures showing the estimated supply and prices of certified and supervised-

accredited pullets and cockerels were included in the review. In the summer months a report of amount of sales and prices at the various auction markets at shipping points under the bureau's supervision was given. This helped to advertise the markets as well as to give the manager of each market an idea of what the other markets were doing. When the egg auction opened at Toms River, in the spring of 1930, the review carried a report of the sales at that market.

MISCELLANEOUS SERVICES

The foregoing duties were carried on throughout the year and, in addition, there were several seasonal services rendered to various groups and individuals throughout the state. The seasonal services were as follows:

1. Fruit and vegetable quotations were again forwarded to the various shipping point auction markets. These included quotations on the most important commodities at the New York, Newark, and Philadelphia markets. During the 1929 season, the Cedarville and Rosenhayn markets received quotations through the Cumberland County agricultural agent's office at Bridgeton, but in the early part of the 1930 season, the service was changed and they received the quotations by telegram from the Bureau of Markets. The new auction market at Williamstown also received telegrams on the most important products for that territory.

2. The berry growers in Hammonton and vicinity again received special information on berries. In cooperation with the Hammonton Market Commission and the United States Bureau of Agricultural Economics, quotations on several important berry markets were transmitted to the Hammonton market from Philadelphia. The berry crop this season was very heavy and, with the expansion of the Japanese Beetle Quarantine area, the service was of considerable benefit to the shippers in assisting them to select markets. It also aided the farmers to know the value of their berries on the local market.

3. Scranton and Wilkes-Barre, Pa., are becoming more important each year as outlets for New Jersey produce. Many shippers are now trucking direct to those points. In the past year, arrangements again were made with the Pennsylvania Department of Agriculture to furnish us with quotations on apples, peaches, string beans and sweet corn at those markets. This information was forwarded to the office of the Burlington County agricultural agent, where it was available to large growers and associations which use those markets. It also was used by growers who called the Trenton office.

4. The increasing use of the motor truck as a method of transporting fruits and vegetables to market makes a knowledge of the farm prices of more value than it formerly was. Truck buyers traveling from farm to farm are familiar sights throughout the state. In order to have the farmer prepared to bargain with these buyers, the bureau, two years ago, arranged that the farm prices of apples in the northern part of the state be made available to all farmers in that vicinity. The crop last season was exceptionally light and, as a result, the service was not so valuable as it had been the year before. However, it was used by several of the smaller growers and helped them in obtaining a fair price for their apples. This project was carried on in cooperation with the county agricultural agents of Sussex and Hunterdon counties.

FARM PRICES

Farm prices of some twenty fruits and vegetables were collected semi-monthly and turned over to the Federal-State Cooperative Crop Reporting Service. As in the past, these were secured from questionnaires and an average price tabulated for each commodity.

HIGHTSTOWN POTATO INFORMATION OFFICE

The department's initial venture in operating a field office to furnish up-to-the-minute information on potato movements and prices was made in the heavy-crop, low-price year of 1928. Even under adverse marketing conditions, the service provided was reasonably successful and, under the circumstances, it was considered worth while to maintain such an office during the more favorable marketing season of 1929. The re-opening of that office in the latter season was well vindicated.

The Hightstown office began functioning July 22 and continued in operation for a period of five weeks until, August 23, the end of the short season. The purpose of the office was to place at the disposal of growers and dealers information concerning the daily car shipments from New Jersey and competing states, the distribution of daily shipments from New Jersey, the daily local f. o. b. prices, prices paid by truck buyers to farmers, and current prices in the various important wholesale markets, particularly New York, Newark, Boston, Philadelphia, Detroit and Chicago. Of the greatest importance was the price paid or offered to growers by truck buyers. Demand for this particular type of information was frequent and was accentuated in importance by the fairly high prices existing and the fluctuations which

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occurred almost daily. The office was able to furnish reliable truck-price information, which was obtainable through no other agency. Growers have been free in favorably expressing the value of the department's Hightstown office in this respect and it was evidenced that some sales to truck buyers were made only after farmers had obtained the latest information available through the office. This service, the bureau feels, did much to stabilize prices at the farms and, undoubtedly, assisted producers to obtain the full market price for their crops.

Service rendered to dealers was less frequent and for the most part consisted of furnishing information on car shipments and primary destinations. The larger shippers were in direct touch with the various large markets, but a number of smaller dealers depended to a certain extent on both shipment and price information from the Hightstown office.

Because of its success during the 1929 season and because of the numerous favorable opinions expressed by growers as to its decided value to them, the potato information office at Hightstown is a permanent project in the department's program for improving marketing.

RECORD OF INCOMING PHONE CALLS—AUGUST 1 TO 23, 1929
HIGHTSTOWN OFFICE

August	1.....	18
	2.....	27
	3.....	9
	4.....	Sunday
	5.....	22
	6.....	31
	7.....	29
	8.....	18
	9.....	14
	10.....	9
	11.....	Sunday
	12.....	21
	13.....	20
	14.....	23
	15.....	32
	16.....	24
	17.....	13
	18.....	Sunday
	19.....	20
	20.....	19
	21.....	24
	22.....	14
	23.....	10
	Total	397
	Daily average.....	20

OPINIONS

At the close of the season, a brief questionnaire was sent to sixty farmers and twenty dealers who had obtained information from the Hightstown office. Among the questions asked were, "Was the Hightstown office of benefit to you? If so, how?" and "What criticisms or suggestions do you have for improving this service?" The following are some of the answers received from growers. The originals of them are on file.

"Gave me an idea as to future prices so that I knew whether to sell or hold. Also showed me when it was better to sell at station or ship to New York."

"By the reliable information I was able to receive."

"I sold to trucks that drove in. All of my potatoes were sold that way. It was good to know the prices each day."

"By enabling me to get top prices from truckmen. If possible have one or two more telephones in office, as sometimes it took an hour or more to get information."

"When I had a car loaded on the track I received some good information to judge whether to sell on that day or whether to hold it over."

"It was a benefit on account of price changes and to know conditions in other states."

"Information obtainable nowhere else."

"Kept me informed on market price which is hard to get accurately any other way. It's embarrassing to ask local dealers and then not sell to them."

"If the information could be gotten earlier. The dealers all know before you do, thus placing the farmer at a disadvantage. The dealer is buying before we get our information."

"More phones in office."

"It kept me posted on the prices so when buyers came after potatoes I knew what to charge for them."

The following are some of the answers received from buyers and dealers :

"Direct, reliable information obtained."

"We were able to keep in touch with prices being asked, and prices that potatoes were being sold for at different points."

"By being able to procure information promptly."

"Enabled us to judge the market."

"It was of no benefit to us and I do not think that it was to any other dealers. The office may have been of some benefit to farmers in keeping them posted as to prices."

"The information which we need daily we have much earlier than your office can get it. The only real service your office can render is to farmers who want to sell potatoes to trucks." (Condensed.)

"Very good. It gave us some good information."

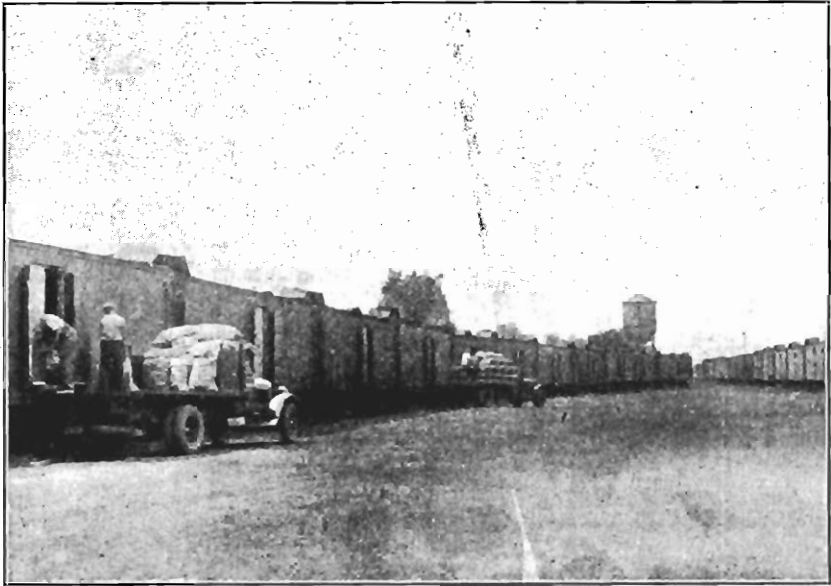
FRUIT AND VEGETABLE STANDARDIZATION

The promulgation of grades and the development of their use is the nucleus of the bureau's fruit and vegetable standardization project. Related to this work are grading demonstrations, talks and exhibits as a means of fostering interest in and acquainting producers with grading, which is a fundamental necessity in good marketing. The inspection and certification of grades of fruits and vegetables at points of origin is a practical application of the standardization work and forms a most important part of the project.

SHIPPING POINT INSPECTION

The inspection of fruits and vegetables at shipping points is a service which has been provided by the Bureau of Markets through a cooperative agreement with the United States Bureau of Agricultural Economics. According to the agreement, such cooperative work is carried on by the state, but under federal supervision. The more rapid acceptance of this service in some other states is due largely to their greater distance from the important larger markets. In New Jersey, shipping point inspection has been utilized in varying degrees, principally by potato shippers, and, in 1929, the eighth year in which federal-state inspection was available, 397 cars were inspected. Eighty per cent of the work was handled in the month of August, and practically all of the remainder in the preceding month of July. A record of the carlot inspections made in the state is shown in the following table:

	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30
Apples .....	....	250	147	124	...	25	13	1*
Peaches	240	380	443	245	188	154	...	83
Pears .....	....	...	2	...	...	...	...	...
Potatoes	1,259	89	77	27	423	757	789	312
Sweet Potatoes....	....	...	...	...	...	...	...	1
Totals	1,499	719	669	396	611	936	802	397

**FIG. 8**

A potato loading scene at Hightstown, where a large part of the inspection work of the Bureau of Markets was carried on during the summer of 1929.

INSPECTION OF POTATOES

With a lighter crop of potatoes and a better market than in 1928, requests were received for two inspectors as compared to requests for six the previous year. Work was started July 22 and was concluded at the end of the short season five weeks later. Quality was good until the end of the season, when scabby, cut and sunburned potatoes appeared in comparatively heavy quantities. The value of the so-called "dealers' grading agreement" prohibiting the handling of potatoes not graded over a one and seven-eighths-inch belt was distinctly reflected in the absence of undersize stock in inspected lots. Fourteen carloads were out of grade the previous season because of undersized potatoes. The number of weekly inspections and the proportion grading U. S. No. 1, together with comparisons for preceding seasons, are shown below:

<i>Week of</i>	<i>Total Cars Inspected</i>	<i>Cars Grading U. S. No. 1</i>	<i>% Grading U. S. No. 1</i>
July 22.....	40	33	83%
29.....	82	61	74%
Aug. 5.....	77	57	74%
12.....	66	47	71%
19.....	47	27	57%
1929 season	312	225	72%
1928 season	789	533	68%
1927 season	757	577	76%
1926 season	423	233	55%

INSPECTION OF PEACHES

One peach inspector was employed for a five-week period to handle the requests for inspection of this commodity. Eighty-three carloads of peaches were inspected as compared to none the previous season, when only forty-one carloads were shipped from the entire state. The chief difficulty encountered in peach inspections was the presence of, or injury by, the oriental peach moth, but the certificates issued were of prime importance in aiding in intelligent distribution according to quality and in preventing unjust claims of deterioration.

INSPECTION OF CANNERY TOMATOES

Inspection of canning tomatoes is a relatively new type of service which has been developed in several of the important canning areas of the country. This service was furnished during the past season for the first time in New Jersey and was confined to one large plant in the southern part of the state. As operated in this state, the primary purpose of the inspection was the classification of grade of each delivery. Certificates were issued to the grower for each load. These indicated the percentage of No. 1, No. 2 and cull stock. The only grading done was the removal of culls, which was best accomplished as a picking operation by leaving decayed stock in the field or by allowing unripe tomatoes to mature until the subsequent picking. Growers in general were interested in this inspection which afforded them an impartial determination of their individual deliveries.

The certification likewise provided the canner with an accurate representation of the relative quality delivered by the various contractors. The price paid was not dependent on the quality delivered, as is the case in some sections, but its possibilities have been recognized by progressive growers who produce and deliver better-than-average quality.

Although guided in policies and grade interpretations by the United States Bureau of Agricultural Economics, this inspection was operated

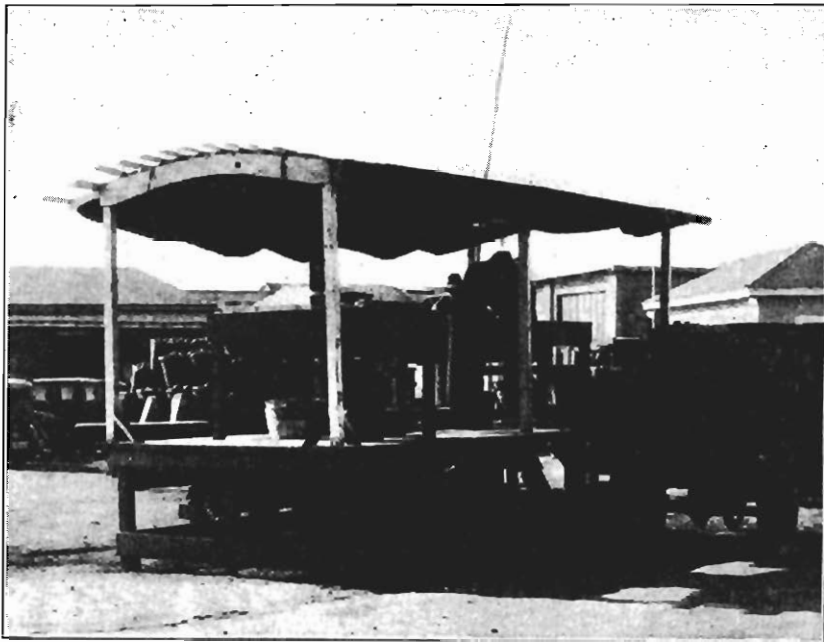


FIG. 9

An inspection platform in Bridgeton, where each load of cannery tomatoes is inspected and certificates issued showing the proportion of No. 1's, No. 2's and culls. This service is provided by the Department of Agriculture.

by the Bureau of Markets as a state service, and represented the largest single plant inspection in the country. A total of 5,144 loads of more than 9,000 tons of tomatoes was inspected.

FINANCIAL STATEMENT

Shipping Point and Cannery Inspection

Receipts: Fees assessed.....		\$1,499.66
Expenses: Salary	\$1,192.50	
Travel	70.86	
Federal fees	39.70	
Refunds	161.29	
Reserve (new supplies)	35.31	
	<hr/>	\$1,499.66

MARKET INSPECTIONS

For several years, the bureau's Trenton office has been designated by the United States Bureau of Agricultural Economics as an inspection headquarters at which applications may be made for straight federal inspections. This receiving point inspection work increased materially in the past fiscal year and the cars inspected totaled 94 as compared to 27, the previous year. Sixty per cent of the inspections were made at the Trenton market. The remainder were made at markets two to 75 miles distant. Comparison of annual receiving point inspections is shown below:

<i>Product</i>	1926-27	1927-28	1928-29	1929-30
Apples .....	..	..	9	5
Cabbage	3	..	..	3
Celery .....	..	..	..	1
Lettuce .....	..	..	..	1
Peaches .....	..	..	1	..
Potatoes	22	11	13	84
Tomatoes .....	..	..	2	..
Watermelons .....	..	..	1	..
Christmas trees .....	..	..	1	..
Totals	25	11	27	94

OTHER INSPECTIONS

As a part of its inspection service, the bureau cooperated with the Extension Service of the New Jersey Agricultural College in inspecting a number of lots of potatoes entered for the 300-Bushel Club. Requirements for membership are that a grower must produce 300 bushels or more of U. S. No. 1 quality potatoes. All the lots inspected by this bureau met the necessary requirements.

STANDARD GRADES

Standards for the grading of various fruits and vegetables were drawn up and officially adopted in the year. Most of these standards are the U. S. Grades as promulgated by the United States Bureau of Agricultural Economics, while a few others are New Jersey standards for products for which there are no U. S. Grades or for products for which the United States requirements were not applicable to New Jersey conditions. All of the grades were discussed and approved by grades committees prior to official adoption and their use by growers

is optional. The grades committees, which represented the State Horticultural Society, the College and Extension Service and individual growers and shippers, were called into conference by the bureau. These grades were published in three pocket-size handbooks, containing standards for the following products:

<i>Fruits</i>	<i>Berries</i>	<i>Vegetables</i>	
Apples	Blackberries	Asparagus	Peas
Peaches	Blueberries	Beans, lima	Peppers, hot
	Raspberries	Beans, string	Peppers, sweet
	Strawberries	Beets, bunched	Peppers, cheese
		Cabbage	Pickles, fresh
		Carrots, bunched	Potatoes
		Carrots, topped	Radishes, bunched
		Cauliflower	Romaine
		Celery	Spinach
		Corn, sweet	Sweet potatoes
		Cucumbers, slicing	Tomatoes, cannery
		Lettuce	Tomatoes, fresh
		Onions	

The efforts of the Bureau of Markets materially aided in having the United States Bureau of Agricultural Economics revise the U. S. Grades for apples to make the standards more applicable to New Jersey conditions. With this change effected, a greater use will be made of the apple grades in this state, particularly in view of the increased recognition of uniform grades by both domestic and export trade.

DEMONSTRATIONS

Continued interest in grades has been manifested by the vocational agricultural schools in the state and, in response to numerous requests, a well-defined program of demonstrations was organized and presented in the various schools. This work was confined to apples, potatoes and sweet potatoes at the option of the school and, wherever possible, the students were given an opportunity to grade under individual instruction. Some of these demonstrations extended over two days in order to cover two or more commodities and to give the instruction to more than one class. Such demonstrations were given in twenty schools in the state. In addition to these demonstrations, the county agents cooperated by holding evening meetings of farmers, at eight of which a bureau representative gave packing demonstrations.

GRADING INVESTIGATIONS

Studies were made during the season on the grading of cultivated blueberries on the basis of the grades previously established by this bureau. The results indicated that the grade requirements are satisfactory and the packs attractive as graded.

Asparagus grading investigations in Monmouth County in cooperation with the county extension service indicated a general practice of making two grades, which meet trade demands. It was further found that a market preference for greener asparagus has changed the local custom of producing white asparagus and has minimized the amount of that type of asparagus produced.

PACKING CONTESTS

The bureau again conducted a series of apple-packing contests held in conjunction with the annual meeting of the State Horticultural Society. The contests were sponsored by a New Jersey package manufacturer. As in previous contests, awards were made for the best packing done in each of two types of containers.

EXHIBITS

Various exhibits were set up to demonstrate grades and to develop interest in their use. Such exhibits were made during the year on the following occasions:

Farm Products Show, Trenton
Horticultural Show, Asbury Park
Gloucester County Fair, Pitman
Atlantic County Fair, Egg Harbor
Potato Field Day, Cranbury

PUBLICATIONS

In addition to the several grades handbooks, a decided need was felt for a marketing publication describing in detail the methods used in selling, the advantages and disadvantages of each, the proper use of grades and the development and value of shipping point inspection. Such a publication, Circular No. 185, entitled "Marketing New Jersey Fruits and Vegetables," was prepared for publication during the year.

MARKETING ORGANIZATION AND SUPERVISION

The work of the bureau in market development has progressed satisfactorily. The auction market system for fruits and vegetables has been expanded and two new auction markets were assisted in organization and opened in the year. In addition, two communities organized auction markets and are operating them according to the system in use on markets being supervised by the state. Many sections of the state are sending parties to the markets under the bureau's supervision to observe the auction system of direct selling. The system has spread to the sale of eggs at point of production. One egg auction is being operated successfully in Toms River and another is being organized in Flemington. Reports of these markets are found under the part of this report devoted to poultry.

A new municipal market was opened in Camden and is being supervised by a man paid jointly by the city and the state. One wholesale market in Perth Amboy is in the process of organization.

At the beginning of the year, it was found necessary for the bureau to employ a man who could give his full time during the shipping season to the supervision of markets cooperating with the state. A man with years of experience in market supervision and having several years' experience as a federal fruit and vegetable inspector, was chosen for the position. The work comes jointly under the project of fruit and vegetable standardization and market organization. The project gained considerable headway under his guidance. He gained the cooperation of farmers and buyers alike, was instrumental in bringing many new buyers to the markets and aided in drawing to the markets supplies of farm produce graded and packed to meet the requirements of large buyers. He works closely with the cooperating market masters and inspectors, assisting them to do their work in such a manner that the greatest possible benefits may accrue to the farmers of the state.

A report of the progress on markets, in the supervision of which the bureau assists, together with a report of new markets established in the past year follows :

HAMMONTON

The bureau followed its usual policy and cooperated with the market commission of Hammonton in the supervision of its market. The bureau obtained a trained man from the United States Bureau of Agricultural Economics to serve as market director. As the season's work overlaps the fiscal year, there is included in this report all of the season of 1929. In the final table, showing work on all markets, the figures

for the fiscal year only are given. The market was run as a supervised market for 69 days. In that time, there were 13,568 sales made. These sales consisted of 75,833 packages, which sold for a total reported value of \$330,636.03. The season was extremely dry, cutting the berry crops, especially raspberries, severely. One unusual feature of the market was the large amount of peaches sold. The commodities sold on the market with the total number of packages of each commodity were as follows:

Strawberries	2,739	crates
Raspberries	9,990	"
Blackberries	50,067	"
Huckleberries	3,110	"
Peaches	9,550	"
Tomatoes	187	"
All Others	190	"
Total	75,833	"

Because of the dry weather, the total sales were nearly 3,000 loads less than in the previous year. There were 13,000 packages less, but the gross sales were \$22,000 greater.

The market opened in 1930 on June 4. Sales for June were very heavy and exceeded the previous year's record by many thousands of dollars. The June sales, not included in those of the 1929 season as reported above, consisted of 3,585 farm loads of 15,682 packages, which were chiefly strawberries and raspberries. These sold for \$108,956.

CEDARVILLE

Encouraged by the success of the auction method of selling the previous year, when it was inaugurated in Cedarville, Cumberland County, the farmers of that vicinity sold a much larger proportion of their products over the block in 1929 than previously. Whereas in 1928, strawberries were the only crop of which a large proportion was sold by auction, in 1929, other crops, notably string beans, onions, lima beans, peppers and peas, were sold by this method.

The bureau cooperated in the operation of the market in 1929, as it had in 1928, by contributing a small sum toward the maintenance of the market. The auction master, in return, represented the bureau on the market. In addition, the bureau's inspector visited the market at intervals, helping in many ways to make the auction method of increasing benefit to buyers and sellers alike. Bureau representatives met with the market directors and the county agent at intervals and cooperated closely with them. The bureau supplied the market master during the active season with the prevailing daily prices on the Philadelphia

and New York markets. These prices were posted on a Bureau of Markets bulletin board and served to stabilize prices. The table on page 112 gives the results of the 1929 season's work on this market.

The market re-opened on May 26, 1930, and, in the month of June, sold \$127,063.03 worth of farm products. Strawberries were the most important commodity, with heavy offerings of peas, beans and some lettuce and onions.

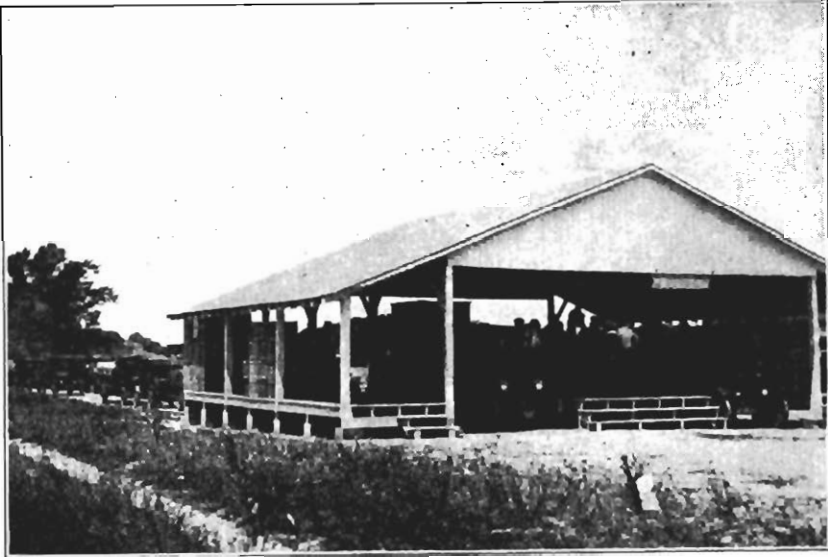


FIG. 10

The Cedarville Auction Market has a central platform, an auctioneer's stand, two driveways to facilitate rapid selling and two outside platforms for temporary storage.

ROSENHAYN

The Rosenhayn market, the second of its kind organized in the state, also is located in Cumberland County. As in the case of the Cedarville market, its second year's operation reflected confidence on the part of farmers. The area represented by this market was very hard hit by dry weather in July and August, 1929, and, as a result, some crops, notably peppers, were almost total failures. For this reason, the year's sales were less than those of the preceding year. However, the 1930 season began under very favorable conditions. In June, 13,578 packages were sold on this market for a total of \$48,857.02. The table on page 113 gives the result of a full year's work, that of the 1929 season, on this market.



FIG. 11

The Rosenhayn Auction Market has only one entrance way, the remaining space being used for storage and assembly purposes



FIG. 12

This picture shows a line of farmers' trucks approaching the Rosenhayn Auction Market

CEDARVILLE AUCTION MARKET

Season of 1929

	Number of Packages Sold	Actual Sales at Auction Market	Charges for Selling at Auction Market	Net Receipts at Auction Market	Estimated Value in the New York Market	Deductions, if Sold in New York Market			Net if Sold in New York Market	Margin by Selling at Auction Market	
						Commission Charge	Freight and Hauling Charge	Total		Profit	Loss
strawberries	23,786	\$104,783.36	\$713.58	\$104,069.78	\$100,481.76	\$10,048.18	\$10,822.63	\$20,870.81	\$79,610.95	\$24,458.83	
tring Beans	54,392	84,540.92	1,060.15	83,480.77	91,332.34	9,133.23	9,790.56	18,923.79	72,408.55	11,072.22	
Onions	46,023	73,150.07	920.46	72,229.61	84,597.82	8,459.78	10,585.29	19,045.07	65,552.75	6,676.86	
lima Beans	16,776	27,591.50	308.08	27,283.42	28,395.92	2,839.59	3,019.68	5,859.27	22,536.65	4,746.77	
Peppers	14,067	9,131.98	159.89	8,972.09	12,779.65	1,277.97	2,532.06	3,810.03	8,969.62	2.47	
Peas	8,011	9,004.83	133.87	8,870.96	10,255.00	1,025.50	1,441.98	2,467.48	7,787.52	1,083.44	
Squash	311	418.15	6.07	412.08	556.13	55.61	74.64	130.25	425.88		13.80
Lettuce	297	263.25	3.57	259.68	338.88	33.89	38.61	72.50	266.38		6.70
Peets	103	103.00	2.06	100.94	128.75	12.88	24.72	37.60	91.15	9.79	
Tomatoe	100	75.00	1.00	74.00	100.00	10.00	13.00	23.00	77.00		3.00
Totals	163,866	\$309,062.06	\$3,308.73	\$305,753.33	\$328,966.25	\$32,896.63	\$38,343.17	\$71,239.80	\$257,726.45	\$48,050.38	\$23.50

Profit by selling at auction market \$48,026.88
 Per cent of profit by selling at auction market 18.63%
 Total number of sales 7,106
 Total number of packages sold 169,940
 Total value of all sales \$321,679.06

ROSENHAYN AUCTION MARKET

Season of 1929

	<i>Number of Packages Sold</i>	<i>Actual Sales at Auction Market</i>	<i>Charges for Selling at Auction Market</i>	<i>Net Receipts at Auction Market</i>	<i>Estimated Value in the New York Market</i>	<i>Deductions, if Sold in New York Market</i>			<i>Net if Sold in New York Market</i>	<i>Margin by Selling at Auction Market</i>	
						<i>Commission Charge</i>	<i>Freight and Hauling Charge</i>	<i>Total</i>		<i>Profit</i>	<i>Loss</i>
strawberries	9,456	\$34,606.91	\$173.03	\$34,433.88	\$37,871.20	\$3,787.12	\$4,302.48	\$8,089.60	\$29,781.60	\$4,652.28	
blackberries	3,643	21,124.09	105.62	21,018.47	19,580.00	1,958.00	1,657.57	3,615.57	15,964.43	5,054.04	
peppers	27,648	17,573.50	87.87	17,485.63	24,492.06	2,449.21	4,589.57	7,038.78	17,453.28	32.35	
string Beans.....	6,834	10,990.14	54.95	10,935.19	12,322.59	1,232.26	1,135.94	2,368.20	9,954.39	980.80	
peas	5,817	7,315.78	36.58	7,279.20	8,586.85	858.69	965.62	1,824.31	6,762.54	516.66	
lima Beans.....	3,098	5,514.98	27.57	5,487.41	6,250.24	625.02	514.29	1,139.31	5,110.93	376.48	
cranberry Beans.	596	1,085.80	5.42	1,080.38	1,169.07	116.91	98.94	215.85	953.22	127.16	
beans	747	847.02	4.24	842.78	1,347.11	134.71	171.81	306.52	1,040.59		\$197.81
raspberries	96½	612.32	3.06	609.26	671.12	67.11	43.91	111.02	560.10	49.16	
lima Beans.....	98	115.20	.58	114.62	127.76	12.78	16.27	29.05	98.71	15.91	
blackberries ...	14	101.43	.51	100.92	98.54	9.85	6.37	16.22	82.32	18.60	
paragus	12	27.75	.14	27.61	31.29	3.13	3.00	6.13	25.16	2.45	
Totals	58,059	\$99,914.92	\$499.57	\$99,415.35	\$112,547.83	\$11,254.79	\$13,505.77	\$24,760.56	\$87,787.27	\$11,825.89	\$197.81

Profit by selling at auction market..... \$11,628.08
 Per cent of profit by selling at auction market..... 13.25%
 Total number of all sales

Total number of all sales	5,051
Total number of all packages sold.....	59,235
Total value of all sales.....	\$103,229.77

LANDISVILLE

Acting upon the request of growers in the spring of 1929, this office cooperated in the establishment of an auction market in Landisville. Mention was made in last year's report of the beginnings of this market. Many things came up in the year to interfere with the smooth operation of this market. Buyers who in the past had practically controlled the shipping point were not willing to cooperate in the operation of the auction market. One cooperative association continued to oppose the new market because it enticed business away from the old market. Lack of cooperation of this kind does not induce successful cooperative endeavors.

The market sold \$46,556 worth of farm produce in the year and was a great help in obtaining better prices for the farmers. It opened again in the spring of 1930, but the same lack of cooperation was apparent and, after a week's operation, it was thought best to close the auction until buyers and shippers should be more willing to get together. The farmers are continuing their organization. They own the auction block and are holding the threat of re-opening as an inducement for fair treatment to the farmers from local buyers.

TRENTON

The Trenton market made a very noticeable gain in volume of produce sold and returns to the farmers. It drew from a more extended area than ever before, therefore supplying the consumers with a greater variety of fresh produce during a longer period of the year. The increase in volume over the preceding year is, according to the marketing director, about 25 per cent. Many new farmers were added to the list of those who sell their produce on the wholesale or retail market.

In the past year, there were 15,926 farmers' loads sold on the Trenton market for a total value of \$452,181.28. In the previous year's report, it was shown that 10,043 farm loads were sold on the retail market for the sum of \$283,398. Adding to this the wholesale market figures of \$37,677.13, we have a total of \$321,075. A comparison of the figures shows an increase in sales made for the present year of more than \$130,000. The Trenton auction market completed its second year. There was a substantial gain in volume over the previous year. There were 54,625 packages sold at auction on this market during the 1929 summer season.

ATLANTIC CITY

Some changes took place on the Atlantic City market in the year ending June, 1930. The platform space was increased by the erection of new sheds with raised concrete platforms. As a result, 140 covered farmers' stalls are available. Four new dealers' stores and an office building were built during the year. The municipal radio station, WPG, has cooperated by broadcasting daily the market report. The report goes on the air at 12:55 p. m. and includes a short comment on market conditions at Atlantic City and other marketing information of interest to farmers. The *Atlantic City Evening Union* and the *Atlantic City Daily Press*, the *Camden Post* and the *Philadelphia Record* have published the daily market report.

The chief inspector of the Bureau of Markets assisted the market director in standardizing the grades in use on this market. Several demonstrations on the standardization of beets, carrots, tomatoes and sweet potatoes were held. The work was so valuable that the market commission decided to hire a full-time inspector for the 1930 summer months. The bureau obtained this inspector for the market. The work was started on June 16 and accomplished much toward improving the quality of produce on that market.

The market, operating mornings only, in the year ending June, 1930, did as much business as in the previous year, when it operated both mornings and evenings. In the year ending June, 1930, there were 14,804 loads of produce sold for a total of \$758,381.

CAMDEN

For the last three years the Bureau of Markets has cooperated with other organizations in an endeavor to develop a municipal market in Camden. In the spring of 1930, it worked with the market committee of the Camden County Board of Agriculture and this market was organized. The City of Camden obtained for a farmers' market a block of land under the approach to the Delaware River Bridge. The site is ideal for a farmers' market. The great bridge makes a very good protection from the weather. The bridge being high above the ground, the market is cool and airy. The Bureau of Markets drew up market rules and regulations for the committee representing cooperating agencies to present to the Camden commissioner of parks and public property for adoption.

The market opened June 25, 1930, in a very successful manner. The market site is surrounded by a densely populated area. Farmers selling on the market were well pleased with the beginning they made. The bureau is cooperating in the supervision of this municipal market by paying a part of a market master's salary.

WILLIAMSTOWN

The Gloucester County Board of Agriculture, in the winter of 1930, asked the bureau for help in establishing a market at Williamstown in Gloucester County. A preliminary survey was made to determine the volume of and the kinds of fruit and vegetables which might be offered for sale on the proposed market. It was found that there was sufficient volume to warrant the organization of a market, but that, in years past, Williamstown and vicinity had been a consignment district. There were no buyers resident in the section. After preliminary meetings of growers and truck haulers, it was decided to incorporate an association having as its object the marketing of farm crops and to establish an auction market. All this was done and the market opened June 1, 1930.

The market is situated in a building adjacent to the Reading Railroad station and yards at Williamstown. The bureau's chief market inspector enlisted the support of several out-of-town buyers and others were obtained through the county agricultural agent. In the first month of the market's operation, 328 farm loads were sold through it for \$12,060.14. Peas were the principal commodity on the market in June. The bureau is assisting in supervision through visits to the market by its chief inspector and by financial support given to a market master. The promised financial assistance for the 1930 season is \$100.

BEVERLY

The Cooperative Growers' Association of Beverly has been one of the most successful cooperative marketing agencies in the state. Many of the members had observed the success of auction markets and, at their annual meeting in January, it was decided to develop an auction market as an additional facility of the Beverly markets. Representatives of the bureau aided the officers of this association in accomplishing the task. The market opened June 23, 1930. It was successful from the start and is expected to aid greatly in marketing Burlington County produce.

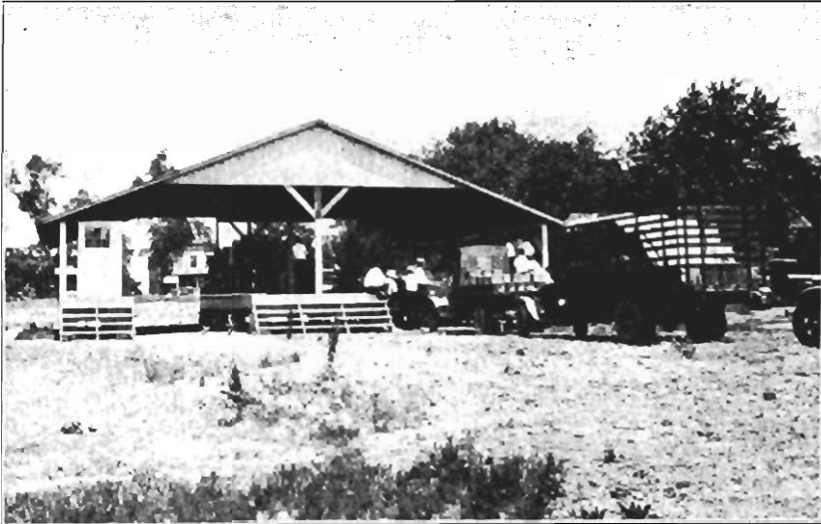


FIG. 13

The Beverly Auction Market is of the two-driveway, central platform type. It has ample space for buyers' trucks and adjacent to it is a large shed for assembly purposes

The bureau gave some aid to other groups, notably in Prospect Plains and Perth Amboy, which were desiring to establish markets. While no assistance was needed from the bureau in the establishment of an auction at Newport in Cumberland County, this market should be mentioned because it is patterned after the Cedarville market. Though but three miles from Cedarville, it opened June 2, 1930, and was very successful in its initial month's work. Officials of the bureau consider that the two markets are too close together.

The bureau endeavored to advertise the shipping point markets in the state through a program of letters to a selected list of 375 buying houses within a 500-mile radius of the state. Some results were obtained through these letters and some buyers and orders obtained for the markets.

The following table shows the volume in terms of farmers' loads and the value of sales in the fiscal year ending June, 1930, on all markets which were supervised in part by the Bureau of Markets. The sales reported for Camden are for four days only, since the market opened June 25, 1930. The sales for Williamstown are for one month

only, the market having opened June 1, 1930. The Toms River figures cover 483 cases of eggs sold in June, 1930. All other figures cover a full year's period.

SALES MADE FISCAL YEAR 1929-30

<i>Location</i>	<i>Loads Offered and Sold</i>	<i>Gross Value All Sales</i>
Camden	156	\$4,533.00
Williamstown	328	12,060.14
Toms River .....	...	4,332.60
Landisville	2,996	28,622.36
Rosenhayn	4,744	103,754.00
Cedarville	7,420	343,745.40
Hammonton	13,574	358,114.74
Atlantic City	14,804	758,381.00
Trenton	15,926	452,181.28
Totals	59,948	\$2,065,724.52

Report of the Bureau of Statistics and Inspection

STATISTICAL AND RELATED WORK

CROP REPORTS

The New Jersey Crop Report was issued monthly, as usual, in cooperation with the crop reporters and the Bureau of Agricultural Economics of the United States Department of Agriculture.

Because of excellent transportation facilities, New Jersey farmers are obliged to compete at the New York, Philadelphia and other markets with those of other states. In order to keep New Jersey farmers informed about the acreages, expected yields and total production of various farm commodities grown on a commercial scale in competing states and, in this way, help the farmers to plan their farm enterprises, considerable space in the New Jersey Crop Report was devoted to individual crops and their conditions in the competing states.

INDEX NUMBERS

In addition to the index numbers of New Jersey farm prices, published monthly in the Crop Report, index numbers of New Jersey prices of hired farm labor, feedstuffs and fertilizer materials for the years 1928 and 1929 were prepared. A publication on this subject (Circular No. 181) is now available. It is a supplement to Circular No. 155, which was published in 1929.

STATISTICAL HANDBOOK OF NEW JERSEY AGRICULTURE

There is a very strong, continuous demand from New Jersey farmers, as well as from the farmers of other states and various business establishments, for information in regard to the acreage of agricultural land, the acreage devoted to various crops, yields per acre, total production and total value of agricultural commodities grown in the different counties of the state. To answer this demand, a "Statistical Handbook of New Jersey Agriculture" was published in 1929. This handbook consists of the following parts: (1) types of soils, climate and plant adaptation of New Jersey; (2) gross income and relative importance

of each county in acreage, production and value of crops; (3) total, rural and farm population of New Jersey; (4) acreage, number of farms, value of land, buildings and machinery; number of farms classified by size; degree of ownership by counties; (5) livestock and livestock products; (6) acreage, production and value of cereals, potatoes, hay and forage; (7) orchard fruits; number of trees, production, value and shipping season; (8) vegetables; acreage, production, value and shipping seasons; (9) farm mortgage; prices paid to producers of farm commodities; index numbers of prices, and (10) miscellaneous statistics.

POPULATION AND FOOD SUPPLY OF NEW JERSEY

The bureau made a study of the population and food supply of New Jersey, in order to give a picture of New Jersey's population growth since the time of the first settlers. Some geographical factors, which influenced the establishment of the first settlements and promoted the growth and expansion of population in New Jersey's territory, were considered in the study. In connection with the work, maps showing the growth and distribution of New Jersey's population since 1810 were prepared.

With the problem of population usually is associated the question of food supply. An attempt was made to compare the varieties and quantity of food produced on New Jersey farms with the varieties and quantity of food sold within the state by retail stores. Circular No. 179, which covers the study, is in press at the present time.

MIGRATORY FAMILY FARM LABOR SURVEY

At the request of the American Cranberry Growers' Association, studies of migratory child labor on New Jersey farms were started in April. The main object of these studies is to find out the facts concerning (1) the reasons why migratory families are employed by the farmers; (2) what cities are supplying this labor; (3) the number of migratory families working on New Jersey farms; (4) the number of adults and children in each family; (5) types of work performed by the children; (6) hours of work per day performed by children; (7) earnings per day and season of children and adults separately; (8) school attendance of the children; (9) the diet of children and their living conditions; (10) the height, weight and age of children. These are the high points of the survey. Besides these many other



FIG. 14

Migratory family labor is employed to pick strawberries on many southern New Jersey farms

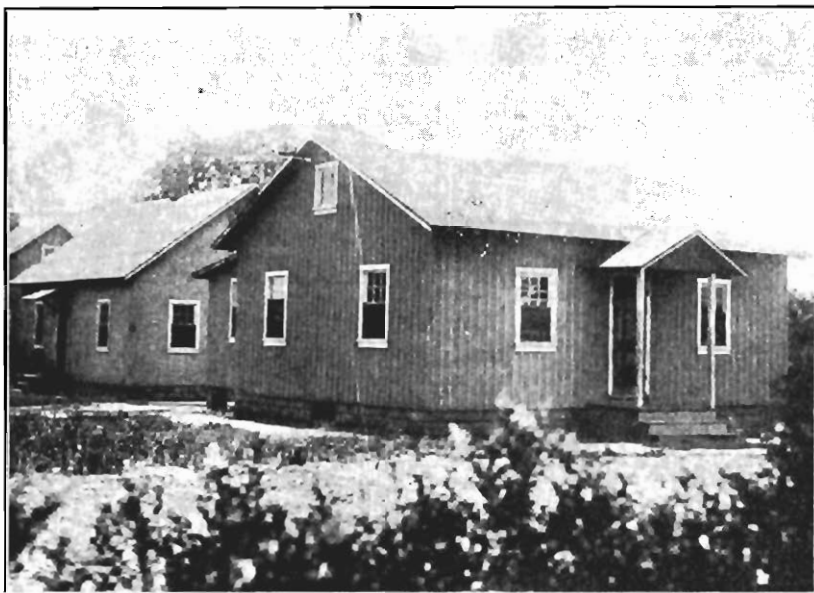


FIG. 15

This picture shows migratory workers' houses on a southern New Jersey farm.

points are included. The studies will be continued and completed during the next fiscal year.

On July 1, Governor Larson appointed a commission consisting of one representative from the Department of Agriculture, one from the Department of Labor, one from the Department of Education and one from the State Board of Health to study the question of the employment of migratory child labor in New Jersey. This commission was authorized by the 1930 Legislature. The results of the studies requested by the American Cranberry Growers' Association will be made a part of the findings of the Commission.

TYPES OF WEATHER IN TRENTON AND THEIR FREQUENCY

The bureau purposes to analyze Trenton weather data for the 16 years from 1914 to 1929. The method of analysis is a new one. According to it, almost all daily weather factors are taken into consideration. When the types of weather are established, the practical application of the results of the analysis will be made in relation to the factors which determine the yield of white potatoes per acre. The analyzed weather data may be applied to many other purposes.

RECEIPTS OF PERISHABLE FOOD COMMODITIES IN THE NEW JERSEY SECTOR OF THE NEW YORK METROPOLITAN AREA

The food requirements of our large industrial centers and the method and manner of meeting these requirements is always a matter of vital interest to many individuals and to civic groups. Any data added to the existing fund of knowledge on this subject are of value. A study was made of the receipts of selected perishable food commodities, principally fruits and vegetables, in the New Jersey sector of the New York metropolitan area for the year 1928. Both rail and truck receipts were covered at all points where records were available. The results of this survey were published in Circular No. 173.

COSTS OF QUARANTINES IN NEW JERSEY

The subject of the costs of quarantines is one of perennial recurrence and increasing importance. At the request of various organizations and individuals, a study was made of the economic costs of the Japanese and Asiatic beetle quarantines to all those subject to quarantine regulations in their business operations. Information on actual costs

was obtained for the nursery and greenhouse industry, the sand industry, shippers of farm products and shippers of salt hay, moss, etc. The results of this investigation with certain conclusions are set forth in Circular No. 182.

FEDERAL LAND BANK STUDY

In cooperation with the New Jersey Federation of National Farm Loan Associations, steps have been taken toward bringing about a change in the attitude of the Federal Farm Loan Board regarding the making of farm loans in New Jersey.

It has been the contention of the Federal Farm Loan Board during the past several years that it cannot approve loans on farms devoted to the production of specialized crops, unless the ability of the land to produce the general crops, consisting mainly of cereals and grasses, is apparent. Where such proof is present, the tendency has been to value such land on the basis of its ability to produce the general crops rather than on its value for the production of the special crops. The position of New Jersey's representatives in this matter is summarized in the following:

"New Jersey is one of the eastern states in which the growing of general farm crops is diminishing, their place being taken by plant and animal crops which return a much higher income. This change is not incident to the running out of the land for the production of general agricultural crops, but is due to the fact that the farmers of this state can and do make more money out of the crops which they are substituting for these general agricultural crops. Furthermore, it is a demonstrated fact that the values involved in farm loans in New Jersey are more quickly covered by gross income or by net income than is the case in other large sections of the United States."

Conferences were held during the year with members of the Federal Farm Loan Board and data supporting the contentions of the New Jersey representation presented. The answer of the Farm Loan Board was that it is bound legally to its present position regardless of other considerations, since the Farm Loan Act specifically states that in making appraisals of farm lands for loaning purposes, the "value of the land for *agricultural purposes* shall be the basis of appraisal and the earning power of the said land shall be the principal factor." The term "agricultural purposes" has been interpreted to mean the production of the general agricultural crops.

To eliminate the difficulty arising out of this interpretation, there has been drawn up a proposed amendment to the Federal Farm Loan

Act which would add to the definition of the term "agricultural purposes" the words "including the production of all plant and all animal crops." This proposed amendment was endorsed at national conventions held in the past year by both the American Farm Bureau Federation and the National Grange and is now in the hands of the Washington representative of these organizations pending a favorable time for introduction.

In connection with this work, much information has been and still is being assembled regarding the lending experience of the Federal Land Bank of Springfield, in this state, the history of the farm loan system, etc., which will in time be made available in printed form.

LARGE SCALE FARMING

The subject of "industrialized" or "large scale" farming is one of great interest and still greater controversy at this time. Its place in the future agricultural organization is a topic of much speculation. In order to obtain some idea of the present status of "large scale" farming in this state and to determine whether there are any definite trends connected therewith, a study is being made of all such "large scale" units. If the data permit, a comparison will be made of production costs on such units and on average-size units.

MOTOR TRUCK RECEIPTS AT NEWARK, NEW JERSEY

Work was continued at Newark in checking motor truck arrivals of fruits and vegetables at both the farmers' and wholesale markets, from May 1, 1929, to December 31, 1929, when it was discontinued. A summary of the receipts will be found in Circular No. 173 of the department.

ROADSIDE MARKET SURVEY

As work on a survey of roadside markets in Monmouth County progressed, it was found possible to extend the survey into several other counties. Results of a separate survey conducted in Bergen and Essex counties were added to the bureau's findings. All together, seven counties were included in the survey. The results are given in Circular No. 186.

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NURSERY INSPECTION SERVICE

The following tables summarize the plant inspection activities of the bureau for the fiscal year ending June 30, 1930, and include nursery inspections, domestic and foreign nursery stock inspections, the certification of stock consigned to Canada and the certification of narcissus bulbs in compliance with federal regulations. In the case of certain types of inspection, additional tables, summarizing the work for the past five years, are presented.

FOREIGN STOCK INSPECTION

Fall of 1929					Spring of 1930			
<i>Origin</i>	<i>Cases</i>	<i>Palm Seeds</i>	<i>Fruit Stock</i>	<i>Roses</i>	<i>Origin</i>	<i>Cases</i>	<i>Roses</i>	<i>Bulbs</i>
Spain	5	5	..	..	Ireland	1	1	..
France ..	2	1	1	..	Holland	2	2	..
England .	8	..	..	8	Japan	44	..	44
Germany .	10	..	..	10	Totals	47	3	44
Holland .	62	..	..	62				
Totals .	87	6	1	80				

DOMESTIC STOCK INSPECTION
(Ornamental)
Fall of 1929

<i>Origin</i>	<i>Cases</i>	<i>Cars</i>	<i>Trucks</i>	<i>Bales</i>	<i>Roses</i>	<i>Perennials</i>	<i>Greenhouse Plants</i>	<i>Shrubs</i>	<i>Bulbs</i>	<i>Vines</i>	<i>Seeds</i>	<i>Aquatic Plants</i>	<i>Evergreens</i>	<i>Vegetable Plants</i>	<i>Trees</i>	<i>Hardy Ferns</i>
Pennsylvania	21	..	8	1	6	5	16	2	..	..	..	..	1	..	..	..
Delaware	1	..	9	10	6	..	..	4	..	..	..	..	..	7	..	..
New York	31	..	..	4	8	2	1	12	7	5	..	..	..	..	..	..
California	15	24	..	2	26	6	5	1	1	..	1	..	1	..	..	..
Connecticut	18	..	..	..	18	..	..	..	..	..	..	..	..	..	..	..
Ohio	241	1	..	8	5	218	25	1	1	..	..	..	..	..	..	..
Virginia	7	1	..	..	..	1	1	5	..	1	..	..	..	..	..	..
Florida	4	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..
Georgia	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
New Hampshire .....	..	..	..	2	..	..	..	..	2	..	..	..	..	..	..	..
Wisconsin	14	..	..	..	..	10	4	..	..	..	..	..	..	..	..	..
Michigan	31	..	..	6	..	17	..	..	20	..	..	..	..	..	..	..
Arkansas .....	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..
Vermont	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Oregon	6	1	..	..	4	2	..	..	..	..	..	1	..	..	..	..
Minnesota	5	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..
Iowa .....	..	..	..	6	..	..	..	..	6	..	..	..	..	..	..	..
Massachusetts	76	..	..	..	..	63	1	..	..	..	..	..	..	..	1	11
Porto Rico	30	..	..	..	..	..	30	..	..	..	..	..	..	..	..	..
Illinois	5	..	..	2	..	7	..	..	..	..	..	..	..	..	..	..
Colorado	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
North Carolina	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Louisiana	10	..	..	..	..	2	8	..	..	..	..	..	..	..	..	..
Maryland	7	..	..	..	..	..	7	..	..	..	..	..	2	..	..	..
Totals	526	27	17	42	74	335	102	25	43	9	2	1	2	7	1	11
Grand Totals..		612								612						

DOMESTIC STOCK INSPECTION
 (Ornamental)
 Spring of 1930

<i>Origin</i>	<i>Cases</i>	<i>Cars</i>	<i>Bales</i>	<i>Shrubs</i>	<i>Roses</i>	<i>Bulbs</i>	<i>Perennials</i>	<i>Greenhouse Plants</i>	<i>Vines</i>	<i>Evergreens</i>	<i>Aquatic Plants</i>	<i>Trees</i>	<i>Rhododendrons</i>
California	54	8	15	21	11	..	..	41	1	..	3	..	..
Michigan	8	..	1	..	..	7	1	1	..	..	..	..	..
Massachusetts	6	..	..	..	..	4	2	..	..	..	..	..	..
Louisiana	12	..	..	..	..	1	8	3	..	..	..	..	..
New York	33	..	11	11	15	2	3	..	..	11	..	2	..
Pennsylvania	23	..	3	1	1	1	1	12	..	7	..	3	..
New Hampshire	4	..	..	..	..	2	..	..	..	2	..	..	..
Florida	19	..	..	..	..	..	..	18	..	..	1	..	..
Oregon	1	..	..	..	1	..	..	..	..	..	..	..	..
Connecticut	5	..	..	..	2	..	1	..	..	1	..	1	..
Illinois	4	..	1	1	..	1	..	1	..	2	..	..	..
Texas	2	..	..	..	..	..	..	1	..	..	..	1	..
Delaware	3	..	3	4	..	..	..	..	..	..	..	2	..
Tennessee	8	1	2	6	..	..	..	..	..	3	..	1	1
Ohio	2	..	..	..	..	..	1	..	..	..	1	..	..
North Carolina	7	5	..	2	..	..	..	..	..	10	..	..	..
Georgia	1	..	..	..	..	..	..	..	..	..	..	1	..
New Jersey	1	..	..	..	..	..	..	..	..	..	..	1	..
Virginia	2	6	1	..	..	..	..	..	..	5	..	3	1
Alabama	1	..	..	..	..	..	..	..	..	..	..	1	..
Maryland	12	..	1	5	..	1	..	..	..	3	3	1	..
Iowa	1	..	..	..	..	..	..	..	..	1	..	..	..
Kansas .....	..	..	1	..	..	..	..	..	..	..	1	..	..
Porto Rico	10	..	..	..	..	..	..	10	..	..	..	..	..
Totals	219	20	39	51	30	19	17	87	1	45	8	18	2
Grand Totals.....		278							278				

DOMESTIC STOCK INSPECTION

(Fruit)

Fall of 1929

<i>Origin</i>	<i>Cases</i>	<i>Bales</i>	<i>Trucks</i>	<i>Trees Condemned</i>
Delaware	38	1	1	..
New York .....	..	8	..	..
	—	—	—	—
Totals	38	9	1	..

Spring of 1930

<i>Origin</i>	<i>Cases</i>	<i>Bales</i>	<i>Trucks</i>	<i>Trees Condemned</i>
Kentucky	1	..	..	..
Missouri	13	..	..	31
New York	4	20	..	..
Pennsylvania	1	..	..	..
Maryland	1	..	..	..
Minnesota	1	..	..	..
Delaware	11	4	..	..
Maryland	4	..	..	..
Tennessee	1	2	..	..
Ohio	4	2	..	..
California	1	..	..	..
Georgia	1	..	..	..
	—	—	—	—
Totals	43	28	..	31

NURSERY INSPECTION

The annual inspection of nurseries was begun July 1 and finished in September, except for a number of new nurseries, which were inspected afterwards. In most cases, certificates were issued by September 1, except to a few nurseries that failed to clean up infestations satisfactorily or in time to receive their certificates by that time. On the whole, the nurseries were in a good condition. In fact, in 411 nurseries, there were no important insect infestations found. For the past two years, an endeavor has been made to eradicate all infestations of pine leaf and juniper scale, and this has increased the number of nurseries needing attention.



FIG. 16

Representatives of the Department of Agriculture inspect fruit trees in nurseries for disease infestations.

Six hundred and nine nurseries and dealers' establishments were inspected and certified and certificates issued as follows:

General	441
Rose	80
Fruit	12
Greenhouse	22
Berry	3
Dahlia	12
Fern	1
Orchid	3
Privet	1
Perennial	9
Dealers	90
Total	609

NEW ENGLAND STOCK INSPECTION

The following table shows the inspection of nursery stock originating in the quarantined gipsy moth area of the New England States by months. A total of 1,328 cases and 22 carlots was inspected. No infestations were intercepted.

	<i>Cases</i>	<i>Carlots</i>
1929:		
July	12	..
August .....	..	..
September	97	..
October	153	..
November	98	..
December	144	..
1930:		
January	6	..
February	21	..
March	47	1
April	163	15
May	208	2
June	379	4
Totals	1,328	22

SPECIAL CERTIFICATES

Special certificates were issued to private citizens and to some nurserymen who wished to ship nursery stock to other states and to foreign countries. A certificate was issued at the time of packing if the stock in question was found to be free from injurious insects and plant diseases. Eighty-nine of these certificates were issued.

	<i>Special Certificates Issued</i>
1929:	
July	0
August	0
September	11
October	6
November	8
December	8
1930:	
January	6
February
March	17
April	18
May	14
June	1
Total	89

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SPECIAL INSPECTIONS

Each year numerous requests are received for advice on the control of various insects and on nursery and horticultural problems. In most cases they necessitate visits to the persons requesting aid. Sixty-six of these visits were made. The following table shows the number of special inspections made each month of the past year :

	<i>Special Inspections</i>
1929:	
July	12
August	9
September	3
October	1
November	19
December	1
1930:	
January	3
February	5
March	4
April	2
May .....	..
June	7
Total	66

CANADIAN STOCK INSPECTION

Since the Canadian Department of Agriculture requires certificates of inspection issued at the time of packing, it was necessary to issue 484 of these certificates. The following table shows the number issued each month :

1929:	
July	40
August	1
September	6
October	9
November	10
December	9
1930:	
January	2
February	6
March	29
April	63
May	172
June	137
Total	484

CHRISTMAS TREE INSPECTION

Eighteen thousand, six hundred and seventy-one Christmas trees that originated in the slightly infested gipsy moth area of the New England States were examined for gipsy moth infestations. No infestations were intercepted. Inspections were made in 41 different towns throughout the state.

NARCISSUS BULB INSPECTION

The inspection and certification of narcissus bulbs grown on the various bulb farms in New Jersey are shown in the following table:

Total number of bulbs inspected.....	2,586,941
1,244,000 of these bulbs were not for sale this year	
Total number of bulbs sterilized.....	322,000
Total number of bulbs destroyed.....	4,500
Total number of shipping certificates issued to the growers.....	513

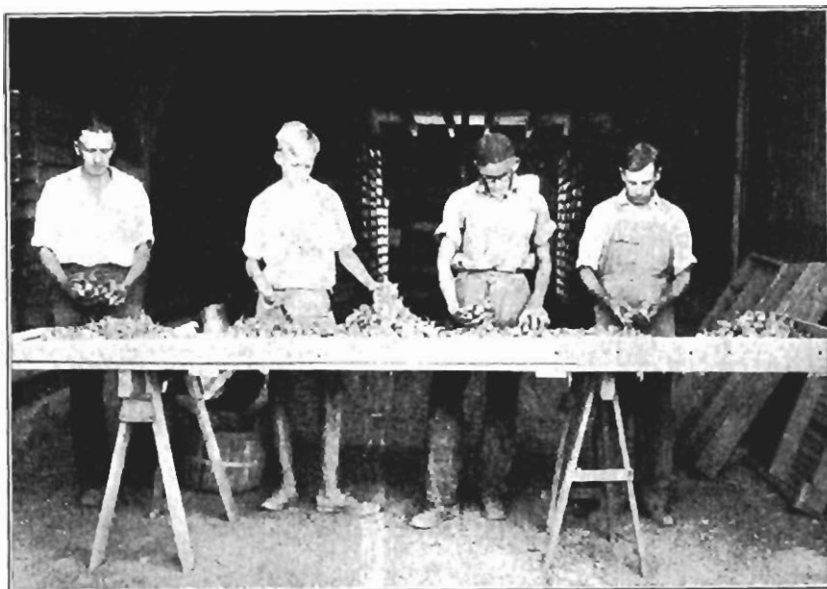


FIG. 17

This picture shows narcissus bulbs being sorted and inspected in a storage chamber.

POTATO TUBER MOTH

Eleven cars of potatoes were examined for potato tuber moth, which had originated on the Eastern Shore of Maryland and Virginia. One carload of seed potatoes received at Prospect Plains, New Jersey, had a general infestation of about one to four per cent. These potatoes were rejected by the consignee after being inspected by this bureau.

After repeated efforts of the consignors to sell these potatoes elsewhere in the state, the seed was finally shipped to Newark and stored. In the spring it was reshipped out of the state. The other cars of seed potatoes, after being inspected, proved to have no, or very slight, infestations of potato tuber moth.

The following number of cars of seed potatoes were examined :

	<i>Number of Cars</i>	<i>Degree of Infestations</i>	<i>Consignee (Name and Address)</i>
November 1, 1929....	1	1 to 4%	Bennett & Clayton, Prospect Plains, N. J.
November 20, 1929... 2	2	very slight	Charles Probasco, Hightstown, N. J.
November 25, 1929... 5	5	" "	Farmers' Exchange, Freehold, N. J.
December 1, 1929.... 1	1	" "	Rooney & Ely, Englishtown, N. J.
December 6, 1929.... 2	2	" "	Chamberlain & Barclay, Cranbury, N. J.

SUMMARY TABLES SHOWING INSPECTIONS FOR
PAST FIVE YEARS

FOREIGN INSPECTIONS

	1925-26	1926-27	1927-28	1928-29	1929-30
July	6	..	..	..	..
August .....	..	..	..	..	..
September	2	1	..	..	..
October	3	..	5*	..	..
November	10	1	23*	..	..
December	36	26*	..	..	47*
January	34	151*	10*	79*	68*
February	19	29*	2*	65*	13*
March	26	20*	3*	8*	1*
April	22	5*	2*	..	..
May	8	42*	..	..	5*
June	7	5*	..	..	..
Totals	173	280	45	152	134

* Number of cases.

DOMESTIC INSPECTIONS

	<i>Cases</i>	<i>Cars</i>	<i>Bales</i>	<i>Trucks</i>	<i>Trees Condemned</i>	<i>Shipments Infested with Crown Gall</i>
1926	336	2	..	..	212	14
1927	285	20	95	..	12	3
1928	485	7	56	..	109	8
1929	639	41	102	..	185	3
1930	826	47	118	18	31	..

NEW ENGLAND INSPECTIONS

	1925-26		1926-27		1927-28		1928-29		1929-30	
	<i>Cases</i>	<i>Cars</i>	<i>Cases</i>	<i>Cars</i>	<i>Cases</i>	<i>Cars</i>	<i>Cases</i>	<i>Cars</i>	<i>Cases</i>	<i>Cars</i>
July	12	...	51	...	4	...	36	...	12	...
August	3	...	8	...	5	...	15	...	...	...
September	80	...	63	...	40	...	68	...	97	...
October	101	1	199	...	180	...	171	1	153	...
November	129	...	136	...	185	...	224	4	98	...
December	61	...	65	...	49	...	106	...	144	...
January	18	...	12	...	26	...	13	...	6	...
February	16	...	18	...	17	...	26	...	21	...
March	63	...	50	...	43	1	33	1	47	1
April	356	9	239	17	292	16	234	14	163	8
May	249	...	459	14	475	6	256	4	208	2
June	197	...	256	...	385	1	458	...	379	4
Totals	1,289	10	1,556	31	1,701	24	1,640	24	1,328	15

NUMBER OF CHRISTMAS TREES INSPECTED WHICH ORIGINATED
IN THE NEW ENGLAND SLIGHTLY INFESTED GIPSY MOTH AREA

	<i>Number of Trees</i>	<i>Number of Towns in Which Inspections Were Made</i>
1925-26	*13 carlots	..
1926-27	4,000	50
1927-28	9,478	33
1928-29	9,289	37
1929-30	18,671	41

* No record of number of trees inspected nor towns in which inspections were made.

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SPECIAL INSPECTIONS

	1925-26	1926-27	1927-28	1928-29	1929-30
July	7	8	7	7	12
August	12	2	3	6	9
September	4	2	4	10	3
October	3	1	1	1	1
November	2	2	..	3	19
December .....	..	2	..	4	1
January .....	..	..	..	3	3
February	1	3	4	..	5
March	4	2	10	2	4
April	1	7	16	1	2
May	1	13	5	..	..
June	11	14	6	6	7
Totals	46	56	56	43	66

SPECIAL CERTIFICATES ISSUED

	1925-26	1926-27	1927-28	1928-29	1929-30
July	6	..	7	5	..
August	3	..	..	2	..
September .....	..	10	..	..	11
October	2	7	..	10	6
November	19	22	3	9	8
December	8	..	10	1	8
January	2	2	..	1	6
February	7	..	..	3	..
March .....	..	4	..	7	17
April	11	10	..	18	18
May	3	7	13	9	14
June .....	..	8	9	12	1
Totals	61	70	42	77	89

NURSERY INFESTATIONS FOR 1925 TO 1929

<i>Nursery Insects</i>	1925-26	1926-27	1927-28	1928-29	1929-30
San Jose Scale.....	18	15	17	21	15
Oyster Shell Scale.....	18	20	39	33	52
Pine Leaf Scale.....	4	3	1	15	15
Juniper Scale .....	..	..	1	16	47
Elm Scale	1	4	9	10	8
Euonymus Scale	5	6	11	17	24
Scurfy Scale	3	2	5	6	1
Rose Scale .....	..	..	..	2	1
Tulip Lecanium .....	..	..	..	1	1
Shot-hole Borer	2	..	..	1	1
Lilac Borer	2	..	3	1	5
Poplar and Willow Borer....	..	..	..	3	5
White Pine Weevil.....	2	1	1	2	1
Leopard Moth .....	..	..	..	1	..
Boxwood Leaf Miner.....	7	12	17	16	13
Bag Worm .....	..	..	1	..	2
Rhododendron Lace Bug.....	5	6	6	23	15
Fire Blight .....	..	..	..	1	..
Spruce Gall Aphid.....	5	1	8	18	18
Juniper Webworm .....	..	..	..	..	2
Other Infestations	11	1	3	2	6

INFESTED AND NON-INFESTED NURSERIES FOR 1925 TO 1929

<i>Year</i>	<i>Nurseries Uninfested</i>	<i>Nurseries Infested</i>	<i>Total Nurseries Certified</i>
1925	177	77	254
1926	224	53	277
1927	282	73	355
1928	355	96	451
1929	411	108	519

SEED CERTIFICATION AND RELATED WORK

WHITE POTATO CERTIFICATION

The second crop season of 1929 presented an unusual opportunity to observe the growing of seed potatoes under very adverse conditions. With a large portion of the East suffering from drought, the southern New Jersey growers were faced with dry hard soils to plow and no rain to assist germination and growth. As a consequence, many fields were plowed late, the plants were slow in coming up and, once up, grew at a very slow rate.

An attempt to show accurately just what the weather conditions were is out of the question as none of the three nearby government weather stations is functioning. In lieu of nearby data, the records of the Philadelphia Weather Bureau are herewith presented as the next best substitute. However, only generalities may be drawn from those reports, inasmuch as identical conditions do not prevail in Philadelphia and in Cumberland and Salem counties. It will be noted, however, that during July and August the rainfall was considerably below normal.

Early in September, the inspection in many fields was deferred because the plants were small and also were recumbent from the heat and dry weather. No general rains were noted until the 30th of September, when rain fell and continued most of that week. Some fields were greatly benefited, while others had suffered from drought so long that recovery was impossible. Frost came early, some damage being noted on October 8, while on October 11, plants in almost every field were killed. From then on, the weather was mostly fair with no frost to hamper digging.

During this season, the most critical cultural factor was the previous cropping of the field. Those who planted following a green manure crop were able to plow early and keep the soil worked until planting date, in this way conserving moisture and creating a more favorable seed bed condition. Those who planted on sod or stubble had difficulty in plowing because of a deficiency of soil moisture. It is interesting to note here that of the ten highest yields seven were from plantings which followed green manure, one on fallow land plowed early and kept harrowed, and two following grain stubble. The lowest yield was reported from a planting which followed grain stubble.

In a year with more favorable conditions, such great difference in yields following stubble or sod versus green manure crops would probably not be noticeable. However, the differences should be taken into consideration by the growers. In general, it is believed to be a mistake to follow grain stubble with potatoes. This practice will usually result in lower yields and should be discontinued.

One large grower who has thought much about the question has finally arrived at the following crop rotation for a five-year period: first year, corn planted with fertilizer, sowed to grain in fall with fertilizer; second year, grass sown and grain harvested; third year, in sod, pastured or mowed; fourth year, plowed, sowed, broadcasted or top-dressed with fertilizer and planted with tomatoes, followed by a green manure crop in late fall, and fifth year, green manure crop plowed under during early summer, kept harrowed and, if the season is dry, harrowing continued to conserve moisture until planting time, but if wet, possibly replowed before planting. With this rotation of crops usually grown in southern New Jersey, the grower is better prepared for either a wet or dry season.

Instantaneous dip-treatment of potato seed before planting was very popular during the year, 94 per cent of the seed having been dipped. An average application of slightly more than one ton of a 5-8-5 fertilizer was used. Several more growers have taken up the use of highly concentrated fertilizers and seem well pleased with the results and with the saving resulting from handling less material.

Spraying with Bordeaux mixture was a practice common to every grower, although there was a wide variation among growers in the way the spraying was done. Some growers by adjusting nozzles according to the size of the vines got good coverage and, in addition, made their applications timely and often, while others paid little or no attention to the coverage obtained or how well the job was done. Early blight appeared in many fields, in some more serious than in others. Aphids and leaf hoppers generally were present in small numbers. The need of a practical and inexpensive aphicide was again noticeable.

Roguing, like spraying, is a job done well by some and poorly by others. The practice of delegating this important operation to others is not to be commended and, when done, the work should be properly supervised and checked and the roguing done by men properly trained in detecting suspicious plants. Leaf roll was the most common disease

present. Some northern seed showed black leg and rhizoctonia, while mosaic and spindle tuber were of lesser importance.

The question of increasing the size of the seed, as set forth in the rules for 1929 specifying the one and three-fourths inch belt, came to a vote early in September. The rule was replaced by the old rule which specifies the one and one-half inch belt. The certification authorities agreed to the change because of the dry season and upon the understanding that such conditions as dirt and cut and bruised tubers absolutely would not be tolerated.

Central New Jersey buyers are expressing a desire for larger tubers and stricter grading, a result of comparing southern New Jersey with northern grown seed. Although their product has been improved, southern New Jersey growers still can exercise more care in preparing their packages to **compete with those of other sections**. It is encouraging to note, however, that New Jersey seed is going into Long Island, Pennsylvania and South Carolina and should be the means of opening these sections as future markets.

Again in the fall the question of purchasing parent stock for 1930 arose. Information on disease-free seed sources was obtained from Prince Edward Island authorities and, as a result, the J. Harry Kandle Seed Club, of Cumberland County, purchased seven carlots.

At least eleven cars of Prince Edward Island seed from fields especially selected for their vigor and freedom from diseases were purchased to be used for seed next year. On this basis, it was estimated that a major portion of the 1930 crop would be planted with Prince Edward Island stock, showing a strong and decided tendency to please the buyers who are desirous of having southern New Jersey seed one year removed from Prince Edward Island seed, as well as indicating the growers' satisfaction in the performance of seed from this source.

SEED POTATOES

Acres Entered for Certification

<i>County</i>	<i>Acres</i>	<i>Per Cent</i>
Cumberland	312.5	50.32
Salem	273	43.96
Monmouth	20	3.22
Burlington	10	1.61
Camden	5.5	.89
	621	100

STATE DEPARTMENT OF AGRICULTURE

Seed Source

	<i>Bags</i>	<i>Per Cent</i>
Prince Edward Island.....	1,893	42.55
Southern New Jersey.....	1,419	31.90
Maine	1,136.5	25.55
	<hr/> 4,448.5	<hr/> 100

Seed Storage

	<i>Bags</i>	<i>Per Cent</i>
Del Bay	2,863.5	64.37
Salem	626	14.07
Woodstown	392	8.81
Riverton	165	3.71
Bridgeton	122	2.74
New York City	80	1.80
Philadelphia	76	1.71
Norfolk, Va.	65	1.46
Glassboro	35	.79
Vineland	24	.54
	<hr/> 4,448.5	<hr/> 100

Seed Disinfection

	<i>Bags</i>	<i>Per Cent</i>
Del Bay (commercial disinfectants) .	4,183.5	94.04
No Treatment	265	5.96
	<hr/> 4,448.5	<hr/> 100

Previous Cropping of Field

	<i>Acres</i>	<i>Per Cent</i>
Green Manure	326	52.50
Timothy Sod	138	22.22
Grain Stubble	111.5	17.95
Early Potatoes	26.5	4.27
Fallow	19	3.06
	<hr/> 621	<hr/> 100

Fertilization

Tons applied (621 acres).....	623.5
Average application per acre.....	2,008 pounds
Heaviest application per acre.....	2,500 pounds
Lightest application per acre.....	1,400 pounds

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Rate of Planting

Total bags of seed planted.....	4,448.5
Average bags per acre.....	7.16
Heaviest planting per acre.....	10
Lightest planting per acre.....	3

Rate of Planting—Weight of Seed Piece:
(Spacing 32 x 11—17,968 hills per acre)

<i>Bags per Acre</i>	<i>Weight of Seed Piece</i>
3	.401 oz.
7.16	.956 oz.
10	1.335 oz.

Yields per acre (5/8 bushel baskets)

Average yield (542.5 acres)	183.7
Lowest yield	45
Highest yield	344

Preliminary Expense per Acre

Seed—7.16 bags @ \$3.00.....	\$21.48
Fertilizer—2,008 pounds @ \$38.00 per ton.....	38.15
	<hr/>
	\$59.63

SUMMARY OF INSPECTION RESULTS 1929

	<i>Cumberland</i>	<i>Salem</i>	<i>Monmouth</i>	<i>Burlington</i>	<i>Camden</i>	<i>Total</i>
Acreage entered	312.50	273.00	20.00	10.00	5.50	621.00
Number of growers.....	34.00	26.00	2.00	1.00	1.00	64.00
Average number of acres per grower.	9.19	10.50	10.00	10.00	5.50	9.70
Acres rejected first inspection.....	9.75	30.00	0.00	10.00	0.00	49.75
Per cent rejected first inspection....	3.12	10.99	0.00	100.00	0.00	8.01
Acres rejected second inspection.....	7.75	21.00	0.00	0.00	0.00	28.75
Per cent rejected second inspection...	2.48	7.69	0.00	0.00	0.00	4.63
Acres rejected third inspection.....	0.00	0.00	0.00	0.00	0.00	0.00
Per cent rejected third inspection....	0.00	0.00	0.00	0.00	0.00	0.00
Acres rejected total.....	17.50	51.00	0.00	10.00	0.00	78.50
Per cent rejected total.....	5.60	18.68	0.00	100.00	0.00	12.64
Acres certified	295.00	222.00	20.00	0.00	5.50	542.50

VARIETAL DISTRIBUTION

<i>Variety</i>	<i>Acres Entered</i>	<i>Acres Rejected and Withdrawn</i>			<i>Acres Certified</i>
		<i>First</i>	<i>Second</i>	<i>Third</i>	
Irish Cobbler.....	584.50	37.75	28.75	0.00	518.00
Green Mountain	19.00	2.00	0.00	0.00	17.00
Red Skin	17.50	10.00	0.00	0.00	7.50

WHITE POTATO SEED CERTIFICATION INDUSTRY OF NEW JERSEY

<i>Year</i>	<i>Number of Growers</i>	<i>Acres Entered</i>	<i>Percentage Rejected</i>	<i>Varietal Distribution</i>	
1919	13	153.50	74.00	Cobbler	127.00
				Giant	22.00
				Green Mts.	2.75
				Mills Prize	1.25
				Norcross	0.50
1920	21	197.00	9.60	Cobbler	133.00
				Giant	42.00
				Mills Prize	10.00
				Red Skins	3.00
				Green Mts.	9.00
1921	85	947.25	38.00	Cobbler	826.00
				Amer. Giant.....	90.00
				Norcross	15.00
				Superb	5.00
				Green Mts.	9.25
				Red Skins	2.00
1922	82	762.00	62.00	Cobbler	658.50
				Giant	79.50
				Green Mts.	13.00
				Norcross	11.00
				Red Skins.....	0.25
1923	54	451.25	48.00	Cobbler	435.00
				Green Mts.....	9.00
				Burbank	5.00
				Spaulding	1.00
1924	66	757.50	13.10	Cobbler	771.00
				Spaulding	20.50
				Green Mts.	4.50
				Norcross	1.50
1925	84	716.00	24.00	Cobbler	771.00
				Green Mts.	4.00
				Norcross	1.00
1926	68	640.25	13.40	Cobbler	630.25
				Green Mts.	6.00
				Red Skins	4.00
1927	150	1,217.00	99.73	Cobbler	1,194.25
				Green Mts.	13.50
				Red Skins.....	9.25
1928	74	586.25	1.15	Cobbler	567.50
				Green Mts.	8.75
				Red Skins	10.00
1929	64	621.00	12.64	Cobbler	584.50
				Green Mts.	19.00
				Red Skins.....	17.50

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PRODUCTION AND DISTRIBUTION CERTIFIED CROP OF WHITE
POTATOES OF NEW JERSEY

	1929	1928	1926
Acres of seeds certified	542.5	579.5	567.75
Total yield (field run) in baskets	99,658.	160,571.	148,666.
Total yield (field run) in bushels	62,286.	100,355.	92,916.
Average yield per acre in baskets	183.7	278.3	261.8
Average yield per acre in bushels	114.8	173.9	163.6
Bags certified seed sold	12,339.	16,966.	21,651.
Bags sold locally	1,863.	918.	2,566.
Bags sold elsewhere in State	9,291.	15,048.	15,968.
Bags shipped out of State	1,185.	980.	3,117.
Virginia .....	.....	.....	2,888.
Connecticut .....	.....	.....	2.
Pennsylvania	885.	980.	50.
Long Island	240.	.....	177.
South Carolina	60.	.....	.....
Bags sold untagged because of grading .....	.....	.....	1,460.
Bags sold locally .....	.....	.....	.....
Bags sold elsewhere in State .....	.....	.....	1,460.
Bags shipped out of State .....	.....	.....	.....
Total bags of seed shipped	10,476.	16,966.	23,111.
Bags seed unsold December 15	3,756.	11,914.	1,844.
Baskets of seed retained for own use	24,458.	22,935.	27,429.
Bushels of seed retained for own use	15,288.	14,334.	17,143.

SUMMARY OF THE WEATHER CONDITIONS

	July	August	September	October	November
Number of days during which rain fell	9.	9.	9.	8.	10.
Heaviest daily rainfall (in inches) .....	.65	1.53	3.	2.04	1.10
Lightest daily rainfall (in inches) .....	.01	.01	.07	.05	.01
Total rainfall (in inches)	1.53	3.22	6.51	3.59	3.11
Deviation from normal (in inches)	-2.62	-1.40	+3.37	+.78	+.41
Average relative humidity at 8 A. M.	71.	69.	76.	76.	74.7
Normal for the month at 8 A. M.	72.	75.	78.	75.	75.
Percentage of possible sunshine	63.	64.	61.	61.	42.
Deviation from normal (per cent)	-1.	+1.	-3.	-1.	-12.
Highest temperature reached	93.	92.	94.	77.	77.
Average of the high temperatures	85.5	81.8	79.1	63.7	53.1
Normal for high temperatures	84.7	82.2	76.3	64.6	52.6
Lowest temperature reached	58.	59.	45.	37.	14.
Average of the low temperatures	68.	64.7	61.5	48.	41.8
Normal for low temperatures	68.1	66.5	68.	49.	38.7

Note.—The Bridgeton and Vineland official weather bureau stations have been inactive since July, 1928. The figures presented above are from the official Philadelphia weather bureau reports, these being considered the best possible substitutes.

SWEET POTATOES

The history of the sweet potato certification work is as follows:

<i>Year</i>	<i>Acres Certified</i>	<i>Growers</i>
1921	101	24
1922	256	51
1923	79	16
1924	50	12
1925	45	11
1926	31	8
1927	20	6
1928	41	7
1929	17	2

As in previous years a circular letter announcing the availability of certified sweet potato seed was sent to each of the county agents and to twenty-five out-of-state individuals. In spite of these sales efforts, only fifty bushels of seed were sold. The interest of the growers has fallen to such a level that discontinuation of this phase of the certification work is the only logical recourse. The seed certified during 1928 was grown in Gloucester and Camden Counties.

The 1929 acreage was distributed as follows:

<i>Variety</i>	<i>Acres</i>	<i>Growers</i>
Yellow Jersey	16	2
Red Jersey	1	1

TOMATOES

The history of the tomato seed certification work is as follows:

<i>Year</i>	<i>Acres Certified</i>	<i>Growers</i>
1921	128.00	16
1922	199.00	23
1923	219.00	32
1924	327.00	40
1925	582.00	58
1926	456.00	71
1927	871.00	74
1928	743.00	68
1929	703.50	63

The 1929 acreage was distributed as follows:

<i>Variety</i>	<i>Acres</i>
Marglobe	360.00
Bonny Best	133.50
Baltimore	87.00
J. T. D.	123.00

The tomatoes certified for seed purposes were grown in Burlington, Gloucester, Camden, Salem and Cumberland counties. The above acreage of tomatoes yielded approximately six and one-half tons of seed. During recent years it became evident that tomato seed certification regulations should be revised. Consequently, representatives of the Agricultural Experiment Station, the State Department of Agriculture and representatives of interested canners of the state met in Camden to discuss a revision of the tomato seed certification regulations, particularly from the standpoint of adopting a progressive three-generation scheme of seed selection. The revised rules will be adopted for the work of the 1930 season. As in previous years, the demand for certified tomato seed has been very gratifying.

RASPBERRY INSPECTION

Dealers shipping raspberry plants into certain states must provide themselves with certificates issued by the State Department of Agriculture. These certificates are issued when the plants pass two field inspections for transmissible diseases. In 1929, inspections were made for five dealers, for the most part in the Hammonton section of Atlantic and Camden counties, as follows:

<i>County</i>	<i>Acreage</i>
Camden	16.00
Atlantic	59.00
Burlington	1.00
Cumberland	6.50
Monmouth	6.50

DISEASE INVESTIGATIONAL WORK

During the year, twenty-one cases of plant diseases reported to the department were investigated. When diseases were found, recommendations for their control were made promptly. A careful laboratory examination also was made whenever necessary. The laboratory facilities of the Department of Plant Pathology at the Agricultural Experiment Station were used for this work. A trip was made to the Arnold Arboretum at Boston, Mass., for the purpose of studying the taxonomic characters of trees and shrubs rather uncommon in New Jersey. This information will be helpful in the classification of host plants in the disease investigational work.

JAPANESE BEETLE SUPPRESSION PROJECT

As in previous years, the work of Japanese beetle suppression has been confined largely to the dissemination of information pertaining to the protection of trees and shrubs, as well as lawns, from the insect. For the purpose of realizing an effective distribution of the spraying recommendations for control of the Japanese beetle, a publication, Circular No. 176, "Japanese Beetle Spraying Recommendations for the Protection of Ornamental Trees and Shrubs and Non-Commercial Fruit Holdings," was prepared. Retail and wholesale insecticide dealers within infested areas were supplied with copies of this circular. This action was taken in the hope that interested individuals applying to their local insecticide dealers for the proper insecticide would have the latest information available at their places of business.

Likewise, an attempt was made to inform the public regarding the practicability and effectiveness of lead arsenate treatment for the protection of lawns. In this connection, a two-page mimeographed statement was prepared. In it such considerations as time of application, rate of application, exercise of reasonable care, etc., were freely dis-



FIG. 18

This picture shows community spraying of trees in Moorestown to protect them from Japanese beetle damage.

cussed. This mimeographed statement was sent to newspapers in infested areas and was published in them. A chart showing the comparative cost of home-mixed lead arsenate and sand and the cost of commercial preparations was prepared. This chart indicated that the relative cost of a commercial preparation is, generally speaking, no greater and in many instances less than the cost of buying the ingredients of a mixture such as is recommended for the control of the beetle grubs.

Informative and exhibitory work probably were stressed a little more than heretofore. The biology departments of each of the accredited high schools of the state were supplied with Riker mounts, showing the metamorphic stages of the Japanese beetle. They were likewise supplied with a set of five mounted leaves of different species, each showing typical Japanese beetle damage. Exhibits were maintained at the Trenton Farm Products Show and the Trenton Flower Show.

Circular No. 180, "Facts Pertaining to the Japanese Beetle," was prepared for publication. This circular attempts to bring under one cover the latest information concerning the practical phases of the Japanese beetle problem. Circular No. 178, "The Asiatic Beetles in New Jersey," was prepared for the purpose of supplying residents of the rather restricted areas of infestation of the Asiatic beetle and the Asiatic garden beetle with information regarding control of these insects.

JAPANESE AND ASIATIC BEETLE REPORT *

ECOLOGICAL INVESTIGATIONS

1. *Extension of range*—By range, in this instance, is meant the area in which the Japanese beetle is of general occurrence. It does not include the total area, the outer limits of which are defined by a line drawn through the outermost points at which colonies of Japanese beetles have been found. The discovery of the insect in new localities definitely outside of the area of general occurrence is a duty assumed by the United States Plant Quarantine and Control Administration.

Active scouting during July and August, 1929, within the range of the Japanese beetle, showed that the area generally occupied by the insect had increased in size at about the same rate as in the preceding year. This rate is not strictly uniform, and the increase takes place

*Furnished by the Japanese Beetle Laboratory, Moorestown, N. J., supported by the New Jersey and United States Departments of Agriculture.

more rapidly in certain directions than in others. This variation in the rate of spread is caused partly by topographic conditions and partly by prevailing wind direction. As hitherto, the advance was found to be slow in rough hilly country and most marked toward the northeast and southeast. The heaviest centers of infestation now lie much nearer to the western limits of the range than they do to its eastern margin. There was a rather more pronounced advance than usual in 1929 in the territory situated immediately west and southwest of Philadelphia, but, despite the presence of large numbers of beetles, the advance in this direction fell considerably short of that in the coastal sections of New Jersey. Evidently, the prevailing direction of summer breezes is the important factor in this case.

Scouting results in 1929 indicated that the outer limits of the range generally occupied by the Japanese beetles were to be roughly defined on the north by a line beginning in New Jersey at Frenchtown, on the Delaware, and extending eastward to within a few miles of New Brunswick and thence southeastward, terminating on the seaboard at Manasquan, New Jersey. In the same state, the southern limits were marked by a line extending from near Pennsgrove, on the Delaware, southeastward, through the northern environs of Bridgeton and Vineland, to Tuckahoe and Ocean City. Between the latter point and Manasquan, the eastern limits are bounded by the sea.

West of the Delaware, in the neighboring counties of Pennsylvania and in extreme northern Delaware, the outer limits now form a wide arc opposite Frenchtown, passing thence southwest through Doylestown and Lansdale and then more nearly southward, through Valley Forge and Paoli, to the vicinity of Wilmington.

2. *Changes in density of beetle population*—As in the two preceding years, changes of Japanese beetle population, during the year, were determined in three somewhat different ways. These were by summer scouting for adults, which afforded a measure of the density of population as represented in different parts of the entire range, and by two sets of more strictly quantitative larval surveys. In one set, certain selected stations, each of rather limited extent, were examined at frequent intervals throughout the greater part of the year. On each visit, a series of diggings, mostly one square foot in area, were made at intervals throughout the area under examination and the larvæ and other underground stages of the Japanese beetle were counted and recorded. In the second set, similar surveys on a more extensive scale were conducted once annually, both at the same and a considerable number of other stations.

General summer scouting in 1929 served to confirm the earlier expressed view that the Japanese beetle is decreasing in the older occupied areas and increasing in those more recently invaded. As an example of the former, the decrease in 1929 in the region centering about Riverton and Moorestown reached a point which caused repeated inquiries to be made by laymen as to "what has become of the beetle." On the other hand, in localities more remote from the original center of spread, the infestation in 1929 reached proportions comparable with the conditions witnessed about Riverton and Moorestown in the years 1920 to 1925. In Pennsylvania, observations in 1929 showed that the area most heavily infested formed a nearly continuous belt of country extending from Bristol and Somerton to Willow Grove, Chestnut Hill and the western suburban districts of Philadelphia. Within this belt are innumerable tracts of well-kept residential lawns and numerous golf courses, both of which afford highly favorable breeding areas for the insect.

In New Jersey, a similar belt or zone of exceptionally heavy infestation was also observed, but its continuity is less obvious, because of the intervention along its course of many scattered tracts of heavily forested or sandy country which afford few suitable breeding sites for the beetle. Furthermore, in New Jersey, golf courses are relatively less numerous than in the suburban sections bordering Philadelphia and extensive well-kept lawns occur at less frequent intervals. Nevertheless, the existence of this heavily infested zone in 1929 was clearly indicated by the occurrence of exceptionally heavy infestations at such places as Trenton, Bordentown, Pemberton, Williamstown, Clayton and Swedesboro. Where this zone enters the western margin of the pine barrens, anything like a heavy infestation is necessarily limited to the various small clearings scattered at more or less widely separated intervals through an otherwise unbroken tract of forest.

It may be of interest to mention that, although for several years the Japanese beetle has been distributed generally throughout the New Jersey pine barrens, no marked increase in its population has been observed at any point within the region, and in some instances, as, for example, at Chatsworth, there appears to be a decided decrease.

The scouting in 1929 showed that the area, within which the Japanese beetle occurred in sufficient abundance to be generally injurious, extended, in New Jersey, as far as Trenton, Mercerville, Allentown, New Egypt, New Lisbon, Hammonton, Malaga, Elmer, Woodstown and Gibbstown. In Pennsylvania it included Morrisville, Newtown, Willow Grove, Ambler, Norristown, Villanova, Swarthmore and

Chester. Some isolated, highly localized, cases of obvious destructiveness were found outside of the limits defined, but these were few in number and quite limited in extent.

The quantitative larval surveys conducted in certain selected areas throughout the greater part of the year ending June, 1930, yielded results which confirmed the changes in beetle population as inferred from the remaining sources of information. In certain of these stations, as, for example, at the golf courses at Merchantville and Moorestown, the general diminution in the number of larvæ infesting a given piece of ground has been most striking.

Still more decisive data bearing on the change in density of larval population have been obtained from the annual survey of numerous, more or less extensive tracts of breeding territory distributed practically throughout the entire heavily infested district. These surveys normally continue from April 1 until June 15, each station being visited once during this period and examined with considerable thoroughness. Most of these examinations were carried out in the "roughs" of golf courses, but some were made in the municipal parks of Philadelphia.

These surveys, in 1930, yielded quantitative data on larval abundance which confirmed the impression of a marked decrease in the older infested sections and a rapid increase in those more recently invaded. This was found to be especially evident in certain of the small city parks or "squares" in Philadelphia, where conditions are fairly uniform throughout, with the larvæ showing no marked tendency toward concentration in limited areas. On the other hand, in tracts where the surface was varied, a pronounced tendency has been observed on the part of the larvæ to congregate in low-lying, sluggishly drained situations, a tendency which may be due to the unusually dry summer of 1929, resulting in the beetles finding favorable conditions for oviposition only in such situations. These marked concentrations of larvæ in a few very limited areas in a tract of rolling country served to emphasize the difficulty of so conducting a larval survey as to secure strictly comparable results in a series of years which were divergent as regards rainfall.

3. *Periodic events in the seasonal life-cycle*—As in previous years, data on the beginning, culmination and end of any particular stage or phase in the yearly life-cycle were obtained. The main result was to confirm the findings obtained in 1929.

4. *Correlation of periodic events with climatic conditions*—Work on the correlation of periodic events in the life-cycle of the Japanese beetle with climatic conditions represented a continuation of previous studies. Probably the greatest progress made along this line was the recognition of pupation as forming a highly critical stage in any attempt to correlate periodic events in the life-cycle with temperature. The indications are that pupation is either completely inhibited or, at least, excessively prolonged when the temperatures fail to reach about 65 degrees Fahrenheit. Apparently, no matter how far advanced larvæ may be at the time they enter into winter hibernation, they do not begin to show traces of transforming to pupæ, the following spring, until the average temperature of the soil reaches the point mentioned. The fact that pupation is largely, if not fully, inhibited at lower temperatures indicates the probability that the duration of the larval stage is not determined solely by the number of effective temperature units accumulated during that stage.

5. *Effect of temperature on different stages in the life-cycle*—Results of studies on the time and rate of development of the egg are in manuscript form. The preliminary copy of a second paper, covering the same subject in the case of the pupa, has been prepared. Experiments have been conducted at the Japanese Beetle Laboratory on the time and rate of development as witnessed under variable temperatures, such as those prevailing in open-air insectaries, in greenhouses and in underground chambers.

During part of the year, comparisons were made between the time required for the development of the egg and pupa as observed under variable temperatures with that at constant temperature. The result indicated that, within the limits of experimental error, the time required for development under a set of variable temperatures would fall close to or coincide with that taken at a constant temperature coinciding with the mean of the variable temperatures. However, this general rule was found to apply only in those cases where the range of variable temperatures lay above the threshold temperature. Whenever any considerable number of temperatures fell below the latter, a deviation from the rule was obtained.

6. *Prediction of periodic events*—Studies have been continued to determine how far the results yielded by experiment could be utilized as a basis for predicting periodic events in the life-cycle under natural, outdoor conditions. Much suggestive information has been obtained.

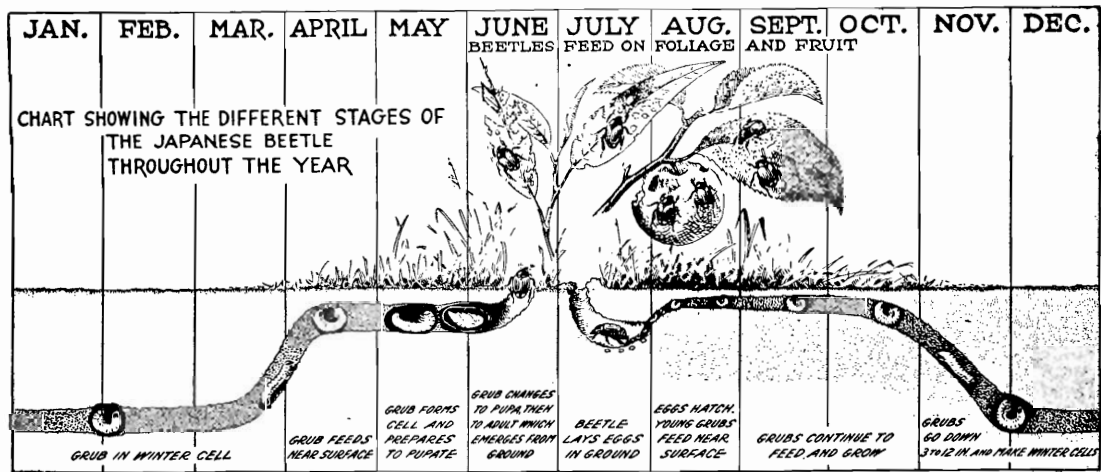


FIG. 19

Diagrammatic presentation of the annual Japanese beetle life cycle.
(Courtesy of Japanese Beetle Research Laboratory.)

The recognition of the fact that the processes leading to the transformation of the larva into the pupa do not ordinarily take place until a temperature of about 65 degrees Fahrenheit is reached, was utilized as a basis for predicting the probable average date of initial emergence of the adult beetles in all sections of the country, on the assumption that the beetle is capable of becoming established in all sections. Maps were drawn on this basis showing the zones within which the beetles, if established, would probably begin to appear between certain dates. During the present season, these maps have been utilized by the scouting service of the quarantine divisions and to date the results appear to be in fairly close agreement with anticipation.

7. *Correlation of atmospheric and soil temperatures*—As the greater part by far of the life-cycle of the Japanese beetle is passed underground, soil temperatures exert important influences on the insect. As for most localities only records for air temperature are available, it becomes desirable to ascertain the relations between atmospheric temperatures and soil temperatures and how far such records can be utilized in computing the time of appearance of the successive stages in the seasonal life-cycle of the insect. As in previous years, very full records of this kind have been kept and these have been studied in order to correlate them. (Prepared by Henry Fox.)

PLANT DISINFECTION INVESTIGATIONS

Plant disinfection investigations have been carried on with the object of obtaining further information on the factors of temperature, moisture, dosage, hardiness, permeability, etc., which are involved in the treatment of various agricultural commodities infested with insect pests, particularly those which are now subject to a plant quarantine, and to improve old methods or develop new methods for treating nursery stock, bulbs, fruit, nuts, soil, etc.

A study has been made of the action of a high frequency electrostatic field on insects and on plants. It was found that a field having a frequency of 25 meters and a flow of four to six amperes killed insects only on long exposure, but it killed or seriously injured growing plants within a few minutes. The electrostatic field apparently affects the organism by heating the tissue to a high temperature. This method of treatment appears to be impractical as a means of destroying insect pests.

A study is being made of the insecticidal action of ultra-violet rays. The preliminary data on insects indicate that the rays have only a weak insecticidal action.

Preliminary tests are being made with several groups of organic compounds as fumigants, using *Mylabris obtectus*, *Epilachna corrupta*, *Popillia japonica*, *Leptinotarsa decemlineata*, *Lepidosaphes ulmi* and other insects as indicators of the effectiveness of the different compounds. The preliminary data indicate that there are several compounds which are superior to carbon disulphide as a fumigant.

Experiments with hot water as a treatment for fruit stock infested with *Lepidosaphes ulmi* or with *Aspidiotus perniciosus* indicate that the oyster shell scale can be destroyed by immersion in water at 112 degrees Fahrenheit for 30 minutes or in water at 120 degrees Fahrenheit for 20 minutes. San José scale was not killed by the treatment at 112 degrees Fahrenheit, but was destroyed at 120 degrees Fahrenheit. Apple, peach and pear stocks were immersed in hot water for insecticidal periods of time without damage while dormant, but the plum, quince and cherry stocks were severely damaged by the treatment.

Ethylene oxide appears to be very promising as a fumigant for destroying insect pests. Experimental work is being conducted to determine the factors which govern its effectiveness as an insecticide and to determine the types of agricultural commodities to which it can be applied.

A method for treating baskets of fresh blackberries, raspberries, strawberries, gooseberries, currants, blueberries and peaches to destroy infestations of *Macrodactylus subspinosus*, *Popillia japonica*, *Cotinis nitida*, *Synchlora erata* and *Arilus creatatus* has been developed and was used successfully in the treatment of several thousand baskets of fresh fruit during the past season. The treatment consists of fumigating the fruit for two hours at a temperature of 80 degrees Fahrenheit with carbon disulphide vapor, used at the rate of 10 pounds to 1,000 cubic feet. This treatment apparently has no appreciable detrimental effect on the appearance, edibility or keeping qualities of the different fruits.

SOIL INSECTICIDE INVESTIGATIONS

In the fiscal year ending June, 1930, the research work was carried on largely with the object of developing new methods and improving existing procedures for destroying the Japanese beetle in immature stages in the soil about the roots of the many different nursery plants.

The experimental work to determine the efficacy of immersing the subterranean portion of dormant nursery plants in water at a temperature of 112 degrees Fahrenheit to destroy the immature stages of the beetle has been practically completed and it is now possible to recommend the treatment as a quick, simple and effective method for treating certain herbaceous plants and deciduous shrubs.

It has been demonstrated successfully that three-year-old plants of *Azalea indica* can be fumigated with carbon disulphide. The plants are put in a special fumigating tank in such a manner that the tops are protected from the gas by being immersed in water, while the roots are exposed to the insecticidal vapor. Experiments are under way to determine the optimum dosage, temperature and period of exposure for the destruction of the insect, the penetration of the gas into soils of different types and with varying degrees of moisture and the effect of the treatment on the azaleas at different seasons of the year.

Extensive experimentation has been carried on with stomach poisons for destroying Japanese beetle larvæ in the soil. It is sometimes a simple matter to demonstrate that a stomach poison will kill larvæ and that it may be applied to the soil about the roots of some plants without causing serious damage. However, it becomes an intricate problem when it is necessary to poison the larvæ in many types of soil, under various conditions, without causing serious damage to the roots of the plants, which often differ only slightly from the insect in susceptibility to the poison. The insecticidal action of a stomach poison in the soil is a complex resultant, which depends upon the interaction of the soil and the chemical and the degree of activity of the insect. A considerable quantity of information has been obtained on the use of lead arsenate and other stomach poisons in the soil, but the knowledge of the action of these materials on the soil, the plants and the insect is far from being complete.

Lead arsenate is now recommended to control the larvæ of the beetle in lawns and in golf greens, but experiments are under way with 560 plots of grass, which have been treated with different doses of lead arsenate and different fertilizers and planted with seven different commercial grasses, in order to obtain further information on the effects of the different treatments on the turf and the effectiveness of the different treatments in protecting the turf from injury.

Extensive experimental work is being conducted with the arsenates, borates and fluosilicates in the soil, in the greenhouse and in 1,050 especially constructed cages in the field to determine the relative effectiveness of the different materials in destroying the larvæ of the beetle

in different soils, the period of time that soils treated with the different materials will remain toxic to the larvæ and the effect of the different treatments on plants growing in the soil. Tests are being made with acid lead arsenate, basic lead arsenate, aluminium arsenate, iron arsenate, barium arsenate, di-calcium arsenate, tri-calcium arsenate, magnesium arsenate, manganese arsenate, zinc arsenate, calcium borate, magnesium borate, manganese borate, sodium borate, strontium borate, zinc borate, barium fluosilicate, calcium fluosilicate, magnesium fluosilicate, potassium fluosilicate and sodium fluosilicate.

On the basis of the experimental results obtained, lead arsenate has been recommended and has been used successfully, on the whole, in the treatment of more than 1,200,000 square feet of soil about the roots of 316,000 evergreen and deciduous plants in commercial nurseries for the destruction of Japanese beetle larvæ. The experimentation with lead arsenate is being continued to obtain further information on its uses and limitations in the destruction of the larvæ in the fields and beds of commercial nurseries. Fifteen thousand evergreen and deciduous plants, which are representative of the types handled by the commercial nurseries, are being grown in the laboratory nursery in soil poisoned with lead arsenate.

Experiments, which were conducted to obtain further information on the poisoning of the larvæ with lead arsenate, have shown that the rapidity with which the poisoned soil is ingested and the rate at which the poison acts on the insect is governed by the temperature of the soil. The hydrogen ion concentration of the soil does not appear to be of great importance in the insecticidal action of the lead arsenate, because the hydrogen ion concentration of the digestive system of the larvæ is practically the same in acid and alkaline soils.

A chemical study is being made in the laboratory and in the field to determine the effect of fertilizers on the solubility of lead arsenate. Tests are being made with ammonium sulphate, potassium chloride, potassium nitrate, mono-potassium phosphate, di-potassium phosphate, sodium chloride, sodium nitrate, mono-sodium phosphate, di-sodium phosphate, calcium chloride, calcium nitrate, calcium phosphate, magnesium chloride, magnesium nitrate, magnesium sulphate, bone meal, dried blood, sheep manure, cow manure and tankage. The results show that the solubility of lead arsenate is modified considerably by the presence of some of these materials.

In the chemical study of the interaction of soil and arsenate in solution, the results indicate that adsorption is the most important factor in rendering arsenates insoluble in soil, although the possibility of the

formation of compounds is not excluded. Considerable variation in the absorbing power of soils has been observed.

It was realized early that, in order to continue the uses of lead arsenate as a treatment for the soil about the roots of growing nursery stock, it was necessary to develop a method whereby it would be possible to determine by chemical analysis the thoroughness of the application and the concentration of the poison in the soil. A method of analyzing the soil has been developed and, as a result, it is possible to maintain the proper insecticidal concentration of the poison in the soil and to avoid causing excess injury to the plants by the addition of excessive quantities of lead arsenate. In the spring, more than 1,000 samples of poisoned soil were taken from the experimental nurseries or from commercial nurseries and analyzed according to this method.

There is a close relationship between those engaged in research work on soil insecticides and those charged with the application of the treatments as a quarantine measure. Recommendations have been prepared, samples of carbon di-sulphide emulsion and of poisoned soil have been analyzed and advice has been given freely on the different quarantine treatments to the Plant Quarantine and Control Administration as the necessity arose. (Prepared by Walter E. Fleming.)

GENERAL INSECTICIDE INVESTIGATIONS

As a result of our study with limes and other inorganic white materials to be used as repellents for the beetle, zinc oxide, basic lead carbonate, zinc sulfide, and titanium dioxide have given promising results. Further work must be accomplished before the use of white non-toxic material can be made practical.

The other volatile materials which gave favorable repellent indications are pine tar oil, bone oil and chloronaphthalene. The problem now is to make fractions of these oils and to make these materials applicable to beetle control in conditions under which it is impossible to use a poisonous material. A paper entitled "The Value of Smudges as Repellents for the Japanese Beetle" has been published.

The investigations with extracts of derris and pyrethrum have shown that the best solvents for extractions of pyrethrum, from the standpoint of killing insects, are glacial acetic acid and ethyl acetate. The best solvents for the extraction of derris are coal tar naphtha and ethyl alcohol. Seventeen solvents were used in the investigational work. A paper covering the findings has been submitted to authorities at Washington.

An electrical trap for killing Japanese beetles was developed. A paper entitled "An Electrical Trap for Killing Japanese Beetles" has been published.

A simple method of permitting rainfall to escape from beetle traps has been developed. The method consists of cutting slits in the bottoms of the ordinary glass jars, which hold the trapped beetles. The slits are cut by an abrasive wheel moving at 10,000 lineal feet per minute. While a slit is being made, a stream of water plays on the glass.

An experiment with 500 traps on a fifteen-acre lawn has shown that large numbers of beetles can be destroyed by trapping. In the experiment, 1,876 pounds of beetles (approximately 10,000,000 in number) were captured. A complete grub survey of the lawn showed many millions of insects, which later were poisoned with lead arsenate. It is believed that beetles can be attracted to areas of poisoned soil and induced to lay their eggs in them.

A new bait for the traps, in which the geraniol and eugenol content has been increased, resulted in the capture of more than two and one-half times as many beetles as were captured in traps containing bait prepared in accordance with previous recommendations. A federal bulletin will be published shortly containing this and other new information about traps. (Prepared by E. R. Van Leeuwen.)

IMPORTED PARASITES OF *POPILLIA JAPONICA* AND *ASERICA CASTANEA*

At the present time five species of foreign parasites are established within the region inhabited by *Popillia japonica*.

The Established Dipterous Parasites

Centeter cinerea—This parasite is established and has spread over 90 square miles. In 1929, five new colonies were started in the heavily

PARASITES OF THE JAPANESE BEETLE

See Figure 20 on opposite page.

1. Fall *Tiphia* parasite. Female. Enlarged three times.
2. Japanese beetle grub with egg (A) of *Tiphia* parasite attached. Enlarged five times.
3. Japanese beetle grub with larva of *Tiphia* parasite attached and feeding. Parasite larva about one-third grown. Enlarged five times.
4. *Centeter* parasite fly laying eggs on Japanese beetle. Enlarged two times.
5. Japanese beetle cut open to show *Centeter* parasite larva (B) feeding. *Centeter* egg shown at (A). Enlarged three times.
6. Japanese beetles with *Centeter* parasite eggs attached. Enlarged about one-half.

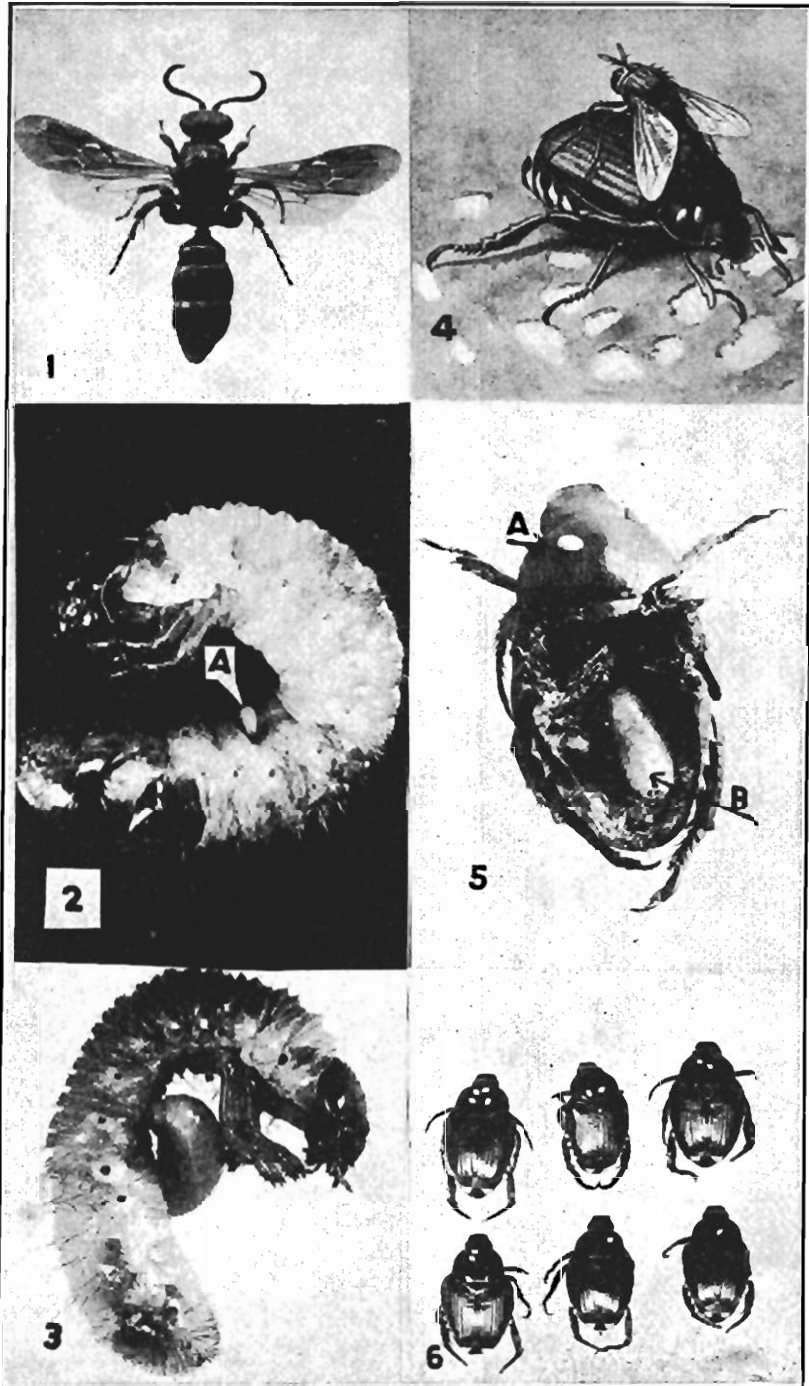


FIG. 20

Parasites of the Japanese Beetle. See opposite page.

infested areas surrounding Philadelphia. Single colonies also were placed at Harrisburg, Pa., and Stamford, Conn. Checks on these colonies show that establishment occurred in most places, including Harrisburg.

In spite of the fact that this species has become readily established wherever it has been liberated, studies show that in this latitude, its appearance is not synchronized with that of its host.

Prosema siberita—This parasite, which is established in the Moorestown area, is distributed too sparsely as yet to effect a notable parasitism of *Popillia* larvæ.

Observations indicated that the insects were considerably more numerous in 1929 than in 1928. The species, which is dependent on late-maturing larvae, has not met optimum conditions in New Jersey and, as a consequence, two new colonies were started in areas in Pennsylvania, where late-maturing host larvae are more abundant.

Dexia ventralis—This fly, like the preceding species, has not met favorable conditions in the Philadelphia district. No increase has been noted for the established colony in New Jersey during 1929. Because late-appearing host larvae are necessary for the success of this species, advantage was taken of the topography of Pennsylvania and a more favorable habitat was selected for the 1929 liberations. These have not yet been re-examined.

The Established Hymenopterous Parasites

Tiphia popilliavora—This parasite is well established in a large mother colony of about 3.5 square miles. In August, 1929, 10,100 females were taken from the mother colony and 101 colonies were placed throughout the infested areas of New Jersey and Pennsylvania. Recoveries of former colonies started in similar fashion, have been most encouraging, showing that the species is readily established when units of 100 females are placed under favorable conditions. To date, this species has been liberated in 145 localities.

Tiphia vernalis—This *Tiphia*, which has been recovered from several points where it was liberated in previous years, has shown a marked increase in numbers in two localities, namely, Philmont, Pa. and Medford, N. J. Indications of the scouting done in 1930 are that the Philmont colony perhaps will be large enough next season to permit subcolonization from that center.

In addition to the growth and recovery of the colonies of this species, seven new colonies were started this spring with 5,942 imported females. One of these colonies was located on Long Island, N. Y. At the present time, this species has been liberated in 19 localities.

Parasites of Aserica Castanea

Aserica castanea—The first liberation of a *Tiphia* parasite of *Aserica castanea* was made in the spring of 1930 from cocoons received from Korea in the fall of 1929. Near Jericho, L. I., 260 mated females were liberated and at Andorra Nurseries, Pa., 250 were liberated. Parasitized *Aserica* larvæ were found in the field ten days later. There seems to be little doubt that this species will survive the winter season here.

Lines of Investigation and Needs for 1932

As pointed out, the dipterous parasites of *Popillia* in the Philadelphia region seem poorly adjusted in seasonal appearance to the appearance of proper stages of their host. Further experiments should be made by actually introducing these parasites into new outlying *Popillia* infested districts, which occur in new life zones, to determine whether these parasites will become more effective through proper synchronization with their host.

The ecology of the two successful *Tiphia* parasites within the immediate area where they are established should receive more study. Further studies should be made also of the reactions of these *Tiphia* to new habitats in different life zones, which are infested with *Popillia*. The work of further colonization should continue within the heavily infested areas of New Jersey and Pennsylvania.

The Foreign Parasite Work

Foreign parasite material has been received in large lots and in good condition and introductions should continue with certain species. However, more research should be conducted to determine a number of points concerning the species which we have not been able to introduce in order to determine why failure occurred. This research should also include studies of certain rare species to determine if they are more abundant in localities hitherto unexplored. Probably one man engaged in pure research, free from the cares of collecting, could obtain valuable information which is very much needed.

SOIL ORGANISMS OTHER THAN INSECTS

Studies on soil organisms other than insects may be said to have shown slow but steady progress during the year. The discovery by Dr. R. W. Glaser, of the Rockefeller Institute of Medical Research, of an apparently highly efficient nematode parasite of Japanese beetle larvae was recorded. It was described last fall as a new species under the name of *Neoapectan glaseri*. This nematode was cultivated successfully for some time in artificial media, but the colonies so obtained could not be grown indefinitely and all perished by midsummer of 1929. Subsequent search in the field for additional material has been unsuccessful thus far but numerous additional forms have been found in association with dead Japanese beetle larvae. (Prepared by J. L. King.)

JAPANESE BEETLE SCOUTING WORK *

(Calendar Year 1929)

Under the heading of Japanese beetle scouting, it is possible to make several subdivisions, such as field scouting; nursery and greenhouse scouting; sand, moss and peat scouting and farm land scouting. A scouting program was carried on rather successfully with the aid of twenty-four crews, comprising twenty-four foremen and fifty-seven scouts.

The geographical limits of the territory under the jurisdiction of each field office remained the same as last year and any activities carried on within a territory were under the supervision of the field office located in that territory. Each man in charge of a field office designated an assistant, who spent practically all of his time in the field maintaining a close and intimate contact with the men working under the supervision of that particular field office. In addition to the very intimate contact maintained by field office heads and their assistants, the agent in charge spent about 80 per cent of his time in the field and his assistant did likewise while this particular phase of the work was being performed.

* Conducted in cooperation with the U. S. Plant Quarantine and Control Administration.

NURSERY AND GREENHOUSE SCOUTING

The state was divided into nine sections and each nursery and greenhouse crew scouted the establishments within the periphery of the territory allotted to it. In some cases, there were numerous establishments assigned to one particular crew, but they were very close together, and it took no more time for the crew to scout this greater number of establishments than for a crew in another territory, where there were not so many establishments, but in which establishments were located at greater distances from each other, to do its work.

The administration of this type of scouting was practically the same as that which had been tried and proved in the past two years. At Class III establishments, where greenhouses were screened, intensive scouting activities were centered in order that the screening might be inspected and that scouts might ascertain that all openings were protected and no adult infestation existed. At each establishment where there was an inspector stationed, he was obliged to go over the entire range of glass every day to keep a close check on the openings and other matters regulated by quarantines 48 and 66. Each crew was assigned a car, the drivers of which were duly insured under a fleet policy maintained in conjunction with the field work.

The crew headquarters were located centrally in the territories and useless and unnecessary travel thereby eliminated. In rainy weather, a great deal of attention was directed to the scouting of greenhouses. Each crew foreman was obliged to paste a sticker on the telegraph pole in front of the postoffice in the town in which he was located to indicate which establishments he would visit on that particular day and the order in which he would visit them. The following is a list of the nursery and greenhouse crews, the towns in which they were located and the number of establishments assigned to each crew :

<i>Crew</i>	<i>Location</i>	<i>Number of Establishments Scouted</i>
P	Bridgeton	43
Q	Red Bank	41
R	Plainfield	41
S	Somerville	22
T	Hackensack	47
U	Dover	32
W	Camden	36
X	Trenton	9

If an establishment consisted of both a nursery and a greenhouse, separate forms were executed for each different phase of scouting. The original forms were dispatched to the state headquarters office at the finish of a day's duty and duplicates were sent to the field office of the crew which had made the inspection. All insects found to bear any resemblance to those in the Riker mounts, which each crew foreman was obliged to carry, were sent to general headquarters for examination by an entomologist. It might be well at this time to explain that the crew foremen in all phases of scouting were equipped with Riker mounts, containing specimens of *Popillia japonica*, *Anomala orientalis* and *Aserica castanea*; as well as a supply of literature on the advance of the work in quarantine and research departments. There were but two complaints registered against the practices of our scouts and both were amicably adjusted.

FIELD SCOUTING

The system of field scouting, which was carried out with some success, in 1928, was used again in 1929. In sections of the state in which no infestation had been recorded or where the infestation was not general, the territory was divided into approximately 25 circles, each circle with a diameter of 14 miles. No automobiles were used for this work and all scouting was conducted on foot.

There were ten crews engaged in this type of scouting. Seven of them were located in the field, and three worked from the state headquarters office. These three special crews were used to check up on doubtful finds, to re-scout territories, to do special scouting in nurseries and, in general, to supplement the work carried on by the rest of the field crews. The foremen of these three crews were experienced men and very trustworthy and there is every reason to believe that unlimited confidence could be placed in their work.

This year, a new system of hiring men by competitive examination was introduced by Secretary William B. Duryee. The questions for these examinations were compiled and each applicant was given one of these tests. Everyone engaged in the work passed the examination. The men were examined on their knowledge of the work of the project, as well as on the general impression they created. This procedure greatly increased the morale of the organization.

Detailed topographical maps were furnished each crew foreman to definitely mark the boundaries of the territory which he was to cover. These quadrangles were divided into blocks and each block given a

number. A report of each day's work was made on an onion-skin paper form. The foremen placed the onion-skin forms over their topographical maps and traced the roads and towns that they had covered. On these forms, they also identified locations where they had found beetles. Each onion-skin form was numbered and bore the following information; the control number, the block number, the number of beetles found, date the beetles were sent to headquarters and the scout foreman's name. The beetles were enclosed in small round tins, each of which contained a pink slip, which bore a number corresponding to that on the onion-skin report and the identity of the location on which the beetles had been found. On the field scouting report, each scout was obliged to state the actual number of hours of scouting done each day and the number of men in addition to himself in the crew. By multiplying the number of men by the number of hours of actual scouting, the total number of man hours performed by each crew each day could be determined. These reports also included information on the number of beetles found and the locations from which they were taken and other pertinent facts.

In 1929, by opening the scouting season, July 1, we were able to permit the men to spend two weeks in a complete circle, whence they moved to the next complete circle, and so on until they had completed the two or three circles allotted them for the season. Upon completing their last area, they would then return to the first area and, in this way, they could re-scout a territory which they had previously scouted perhaps a month or so previously, and at a season well advanced so that in case the beetles in the particular territory they had visited first had not yet emerged they would surely have emerged a month or six weeks later when the scouts returned to this area. Of course, there were intervening territories not included in the circles. Special crews from headquarters took care of the territory from the periphery of one circle to the periphery of another. They were also furnished with topographical maps and reported their finds in the same manner in which the field scouts submitted their reports.

This year, in order to be more certain that the scouts completely covered all of the territory within their circles, there were made up small paste-board forms on which were pasted an exact reproduction of the circle taken from a New Jersey map, and in this way they could always definitely place the end of the territory which they were given to scout. Of course, the special crews from headquarters possessed the irregularly shaped portions of this same map which were left after the complete circles had been given to the field crews. This also helped

them because the irregular territory would be rather difficult to scout without the aid of some definite guide.

Transportation was furnished from one crew headquarters to the next by the field office under the supervision of which the crew worked. Immediately after they were located at the new station, they would submit crew address cards, bearing the names and addresses of all members of the crew, as well as the telephone number whenever possible. This would enable us to get in touch with any scout immediately. Each field crew foreman was obliged to post a sticker on the telegraph pole in front of the postoffice of the town in which he was located giving the direction, names of roads or town, and setting forth any additional information to enable a supervisor from the field office to visit him at any part of the day while he was actually performing scouting duty. By this method an intimate contact was kept with all field crews. Each crew foreman was furnished with a set of instructions explaining in detail every phase of his work, and giving him a good idea of the likely host plants to scout, but these same instructions also cautioned him to scout even though the host plants mentioned did not exist in the place in which he might be working. By this means, he was able to find the best scouting sooner and could therefore do the work better than if he were unacquainted with the likely host plants.

It is believed that the territory north of Hunterdon, Middlesex, and Somerset counties and the counties of Salem, Cumberland and Cape May were thoroughly scouted. In all cases, the field crews were able to return to the first station and to re-scout the territory. Each crew foreman was furnished with a bottle of denatured alcohol, by which means he killed the beetles before sending them through the mail, and this also obviated the necessity of his carrying live beetles and did away with the practice of pinching the heads from the insects, as some of the scouts seemed to have very vague conceptions of just where the head ended.

SAND, MOSS, PEAT, HAY AND STRAW SCOUTING

In most cases, sand pits were located at great distances from field offices and it was therefore necessary to furnish the crews with automobiles. In some instances, however, when a sand pit was within a short distance from a field station of a nursery and greenhouse crew, the crew scouted it in conjunction with its regular work, obviating the long trip for the sand, moss and peat crew and saving time and

expense. One crew, consisting of a foreman and three men, was assigned to the New Brunswick field office. One crew, consisting of a foreman and three men, worked from the Camden field office. One crew, consisting of a foreman and two men, was stationed at Barnegat. A crew consisting of one foreman and three men was allotted to the Glassboro field office. One crew, consisting of one foreman and two men, was stationed at Tuckahoe.

SAND SCOUTING

On July 1, 1929, four crews consisting of four foremen and eleven men were stationed at New Brunswick, Camden, Glassboro and Tuckahoe, respectively, to cope with the scouting work there. It was the duty of these crews to scout the sand establishments assigned to them. On or about June 1, 1929, notices were sent to all sand shippers located within the heavily infested area advising them of the probability of finding adult infestation around their establishments as a result of the scouting and further advising them that, after infestation was found, it would be necessary for them to take some precautionary measures such as fumigation or screening in order to obtain certification. Immediately upon determining that an infestation existed at a sand pit, the man in charge of the field office would call the state headquarters office by telephone and advise those in charge of the condition. After the infestation had been established in most of the sand pits, the scouts were transferred to some other phase of the work until later in the season, when they resumed scouting activities at the sand pits to determine whether or not infestation still existed. If it did not, the requirements were lifted.

PEAT SCOUTING

There are but few peat establishments in New Jersey and they are located in a district where no Japanese beetle infestation exists. Therefore fumigation procedure is not required at these places. The scouting of these establishments is usually taken care of by a nursery and greenhouse crew.

MARL SCOUTING

The very process to which marl is subjected seems to be sufficient to certify the product. It is washed, chemically treated and finally subjected to a high temperature for drying. When the product is bagged,

it is usually still hot. It was ruled that these bags of hot marl should be closed immediately to prevent beetles from laying eggs in them after they should have cooled. All establishments were subject to the periodical surveillance of an inspector. In some places, where the marl was stored indoors, it was necessary to screen it. In other places, where the marl was not immediately bagged after drying, screening also was necessary.

MOSS SCOUTING

In the 1929-1930 fiscal year 2,192 bales of moss were certified by an entirely new procedure, which will be explained in a following paragraph.

SALT HAY SCOUTING

A considerable quantity of salt hay is gathered and sold in the little strip of ground just east of the mainland along the southern coast of Ocean County. While infestation has been found in the place, its intensity has not been sufficient to warrant drastic precautionary measures. The straw ordinarily is cut and baled and then hauled to loading points. In the mainland proper, the majority of these points are heavily infested. The procedure followed in certifying this material will be discussed at length under the heading "Moss, Hay and Straw Certification." It is interesting, however, to note that, in the 1928-29 fiscal year, 954 bales of hay were fumigated and certified, whereas, in the 1929-30 year, 1,905 bales were certified according to the simplified procedure.

STRAW SCOUTING

The method of certifying straw, which is produced in quantity in central New Jersey, was substantially the same as that of certifying salt hay and moss. In the 1928-29 fiscal year, 8,478 bales were fumigated and certified, whereas, in the 1929-30 year, 16,185 bales of straw were certified under the simplified plan. The increase amounted to almost 100 per cent.

FARM PRODUCTS

In the 1928-29 fiscal year 1,085,794 packages of farm products were certified for shipment and, in the 1929-30 year, 1,144,838 packages were certified. It was necessary to maintain 21 inspection

points in the latter year, whereas, in the 1928-1929 fiscal year, only 18 inspection points were maintained. This year the bureau discontinued inspection service at Woodruff but was obliged to provide it at Fairton, Mount Royal, Newark and Rosenhayn.

The Newark inspection point was created to relieve the intense congestion at the Paterson Island Market, in Paterson, where a great deal of inspection work had to be done at one time. There was a material decrease in the amount of farm products inspected in northern New Jersey. In the 1928-29 fiscal year, 138,252 units were certified at the Paterson Island Market, while in the 1929-30 year, only 10,073 units were certified at both Paterson Island and Newark. The records indicate that no Japanese beetles were extracted from shipments tendered to inspectors at these points. On several occasions, however, infested corn was presented to the inspectors for certification and was diverted to one of the stores in the area. Corn coming from non-infested territory was sent to points outside the area. Shipments at these points were handled in such a manner that no infestation was sent out with the corn and other commodities.

In the 1928-29 fiscal year, 135,861 units of tomatoes were certified for shipment from various points. This number was very small because of the inferior grade of tomatoes. In the 1929-30 fiscal year, however, the tomato crop was extraordinarily good, the product brought a fair price and 372,335 units were certified. A total of 301,081 units of tomatoes was certified from Swedesboro, Mount Royal and Pedricktown and consigned to canneries in Maryland. This left a balance of 71,254 units shipped from Swedesboro, particularly in crates, to other markets. Seventeen boatloads of 55,850 packages of tomatoes were shipped from Swedesboro, 21 boatloads of 63,153 packages were shipped from Mount Royal and 61 boatloads of 182,078 packages were shipped from Pedricktown. All of them went to canneries in Maryland.

In June 1929, growers of Hammonton and vicinity were notified that after June 28 no berries would be certified unless they were fumigated. Fumigation started August 1 and continued every day until August 20. In this time, 9,880 crates of berries were fumigated. In June, before the beetles were present in sufficient numbers to create a hazard, 1,891 crates were certified. Last year, 11,881 crates of berries were inspected and, this year, 11,771 crates were fumigated or certified. It was necessary to keep only two men at the Hammonton Market this year. They certified practically the same amount of berries as did a larger force which was maintained there last year.

APPLES, PEACHES, ETC.

Last year 90 methods of packing and grading farm products, especially apples and peaches, were approved, whereas, this year 198 were approved. Fortunately, a great deal of the farm products considered likely to be infested, came from areas where only a slight infestation existed. Farms making consistent shipments to points outside the area were scouted intensely by the inspectors. Their results governed the methods of inspection. There were 472 such farms scouted. Some were scouted 12 times in the season, others only a few times.

The number of units of produce certified at Bridgeton, Del Bay, Glassboro, Hammonton, Mount Royal, New Brunswick, Pedricktown, Rutherford and Swedesboro increased since the 1928-29 fiscal year.

NUMBER OF MEN EMPLOYED IN CONNECTION WITH THE INSPECTION AND CERTIFICATION OF FRUITS, VEGETABLES, CUT FLOWERS, HAY AND STRAW

<i>Location</i>	<i>Administrative</i>	<i>Supervisors</i>	<i>Foremen</i>	<i>Inspectors</i>	<i>Total</i>
Glassboro	1	1	5	20	27
Camden	1	1	2
Trenton	1	1	3	5
New Brunswick	1	1
Rutherford	2	2
Totals	1	2	7	27	37

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INSPECTION POINTS, NUMBER OF PACKAGES CERTIFIED AND
NUMBER OF BEETLES REMOVED

<i>Place</i>	<i>Period Operated</i>	<i>Hours Per Day Open</i>	<i>Number of Men</i>	<i>Packages Certified</i>	<i>Beetles Removed</i>
Bridgeton	July 1 to Sept. 14	8	1	41,578	0
Cedarville	July 1 to Sept. 14	*	1*	15,588	0
Camden	June 15 to Sept. 25	8	1	181,917	7
Del-Bay Farms	July 1 to Sept. 7	8	1	42,268	0
Fairton	July 1 to Sept. 14	*	*	3,728	0
Glassboro	June 15 to Sept. 25	8	1**	39,481	17
Hammonton Market ...	June 24 to Aug. 31	8	5	38,042	181
Landisville	July 1 to Sept. 25	8	1	107,760	0
Malaga	July 1 to Sept. 25	8	1	34,688	0
Mount Royal	July 1 to Sept. 7	8	1	63,150	0
Newark	July 2 to Sept. 24	8***	1	6,725	0
New Brunswick	June 15 to Sept. 25	8	1	15,667	0
Newfield	July 1 to Sept. 25	8	1	87,188	0
Paterson Island Mkt. ...	July 2 to Sept. 24	8***	1	3,348	0
Pedricktown	July 1 to Sept. 7	8	1	193,068	0
Rutherford	June 15 to Sept. 25	8	1	22,416	0
Rosenhayn	July 1 to Sept. 14	*	*	7,915	0
Swedesboro	July 1 to Sept. 7	8	4	205,853	0
Trenton	June 15 to Sept. 25	8	1	43	0
Vineland	July 1 to Sept. 25	8	1	10,114	0
Wheat Road	July 1 to Sept. 25	8	1	24,301	0
Totals				1,144,838	205

* Indicates that one man visited these three stations at train times to render inspection service.

** Indicates that this office was open seven day a week in the farm products season.

*** Indicates that these inspection points functioned from midnight to eight a. m. every day except Sunday.

TOTAL NUMBER OF PACKAGES OF FRUIT, VEGETABLES AND CUT
FLOWERS CERTIFIED IN THE REGULATED AREA OF NEW JERSEY,
SUMMER 1929, AND NUMBER OF BEETLES REMOVED

<i>Articles</i>	<i>Number of Packages</i>	<i>Number of Beetles Removed</i>
Corn	7,476	0
Beans	29,048	0
Peas	2,584	0
Lettuce	8,087	0
Vegetables with tops	13,737	0
Misc. Vegetables	715,212	0
Bananas	3,432	0
Misc. Fruits	364,666	189
Cut Flowers	596	16
Totals	1,144,838	205

NUMBER OF BALES OF HAY, STRAW AND SPHAGNUM MOSS
CERTIFIED BY EACH OFFICE FOR SHIPMENT FROM THE
REGULATED AREA OF NEW JERSEY DURING THE 1929 SEASON

<i>Office</i>	<i>Bales Hay</i>	<i>Bales Straw</i>	<i>Bales Moss</i>	<i>Total Bales</i>
New Brunswick	28	....	....	28
Trenton .....	....	16,182	....	16,182
Camden	1,877	3	1,736	3,616
Glassboro .....	....	....	456	456
Totals	1,905	16,185	2,192	20,282

NUMBER OF BALES OF HAY, STRAW AND SPHAGNUM MOSS
CERTIFIED BY ALL OFFICES IN THE REGULATED AREA OF
NEW JERSEY FOR SHIPMENT TO EACH STATE

<i>State</i>	<i>Bales Hay</i>	<i>Bales Straw</i>	<i>Bales Moss</i>	<i>Total Bales</i>
Colorado	112	....	....	112
Connecticut	120	2,702	354	3,176
Dist. of Col. ....	....	....	150	150
Delaware .....	....	....	5	5
Georgia .....	....	....	5	5
Illinois .....	....	....	10	10
Massachusetts .....	....	5,789	277	6,066
Maryland .....	....	808	545	1,353
Michigan .....	....	128	....	128
Missouri .....	....	....	1	1
North Carolina	1	26	71	98
New Hampshire .....	....	132	....	132
New York	1,565	1,490	468	3,523
Ohio .....	....	678	1	679
Oregon .....	....	....	5	5
Pennsylvania .....	....	948	111	1,059
Rhode Island .....	....	802	55	857
South Carolina .....	....	....	41	41
Tennessee	107	....	25	132
Virginia .....	....	....	68	68
West Virginia .....	....	2,682	....	2,682
Totals	1,905	16,185	2,192	20,282

MOSS, HAY AND STRAW CERTIFICATION

Because of an increase in the cost of cal-cyanide, the chemical used in the fumigation of hay, straw and moss, last year, a plan satisfactory to the Federal authorities, was made whereby certification could be granted on hay, straw and moss with the minimum amount of inconvenience to the shipper. It was essential that the plan eliminate any hazards as to the spreading of the insect. Substantially, the plan is based on the inactivity of the beetle prior to 10 o'clock A. M.

(D. S. T.). The products could be loaded directly from a baler to a car before that hour, and they could be loaded after that hour, only if each bale passed through a protected area on its way to the car. The baling could continue providing the material was stored in a beetle-proof building, and the building containing the baler was beetle-proof.

Personal conferences were held with representatives of all of the larger establishments, since each case presented an individual study. In practically every case, the idea was to have a beetle-proof storage room capable of containing one and, in some cases, two cars of the baled product. If an order was received for a car to be shipped outside the regulated area on one day, the car would be loaded on the following morning from the beetle-proof storage room prior to ten o'clock (D. S. T.).

Constant surveillance by department inspectors was necessary and, while the plan adopted did not inflict appreciable hardship on any of the shippers, it resulted in an increase of the products shipped outside the area.

The men who gather sphagnum moss usually spend the entire day in the swamp, bringing in their gathered supply at night fall. Some of the smaller dealers in this product immediately baled it by aid of artificial illumination and loaded it in freight cars prior to ten o'clock (D. S. T.) the following morning. Some of the larger dealers, however, made their baling rooms and storage places beetle-proof and baling was carried on continuously during the day. Complications arose, however, when the loaded freight cars would not leave the station from which the moss was shipped until some time in the afternoon. These shipping points usually were infested. Arrangements, however, were made whereby the railroad company protected the shipment while it was waiting for the train to arrive. In still other cases, many of the bales shipped were wrapped in heavy paper or burlap.

NURSERY AND ORNAMENTAL STOCK

Japanese beetle quarantine offices in New Jersey were located as follows:

Trenton (State Headquarters), Broad street. A field office was maintained in conjunction with it to facilitate work in Mercer County.

Rutherford, Park avenue and Glen road. Inspectors from this office worked in Sussex, Morris, Passaic, Bergen, Essex and Hudson counties.

Camden, 1590 Pierce avenue. Inspectors from this office worked in Burlington and Ocean counties and the northern half of Camden County.

New Brunswick, Throop avenue and Suydam street. Inspectors from this office worked in Monmouth, Middlesex, Somerset, Hunterdon, Warren and Union counties.

Glassboro, Main and High streets. Inspectors from this office worked in Gloucester, Atlantic, Salem, Cumberland and Cape May counties and in the southern part of Camden County.

Total number of classified nurseries	140	
Total number removed 1929	22	
		118
Total number of classified greenhouses	61	
Total number removed 1929	11	
		50
Total number of nurseries and greenhouses	155	
Total number removed 1929	22	
		133
Total number of miscellaneous dealers, including brokers, laurel dealers, etc.	37	
Total number removed 1929	8	
		29
Total number of classified establishments for 1930		330
Total square feet of glass	6,173,999	
Total removed during 1929	599,350	
		5,574,649
Total square feet of glass for 1930		5,574,649
Total acreage	9,846.7040	
Total acreage removed during 1929	390.5375	
		9,456.1665
Total acreage for 1930		9,456.1665

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TOTAL NUMBER OF PLANTS CERTIFIED FOR SHIPMENT TO EACH STATE, EACH MONTH
1929-1930 FISCAL YEAR

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alabama	13,351	8,572	10,615	7,812	5,431	7,706	1,089	1,628	1,673	5,680	15,232	8,299	87,288
Arizona	182	603	675	510	1,123	1,271	201	14	14	184	70	20	4,868
Arkansas	321	408	10,175	2,000	2,108	489	109	17	210	2,271	4,011	592	22,711
California	3,012	8,860	9,817	5,342	13,325	6,101	8,575	487	30,474	38,944	2,758	1,486	116,800
Colorado	298	113	9,341	4,547	1,672	7,246	8,751	400	698	8,142	5,335	625	46,988
Connecticut	34,565	127,206	189,723	242,358	189,723	100,829	271,944	64,573	53,996	70,205	38,401	38,401	1,279,075
Dist of Col.	10,742	14,081	56,517	47,145	24,257	10,739	10,739	8,023	6,503	13,563	19,223	7,725	228,795
Delaware	981,890	862,320	710,572	97,671	118,494	14,816	60,677	58,406	4,841	18,777	62,804	3,060,970	3,060,970
Florida	6,771	5,905	4,932	19,782	3,673	1,380	2,483	17,785	3,104	38,379	46,072	64,680	214,056
Georgia	16,579	22,488	34,164	19,603	8,749	2,856	1,062	120,781	82,487	49,095	76,642	13,144	447,640
Idaho	52	23	469	1,406	598	85	100	586	99	1,032	60	38	4,568
Illinois	88,508	165,382	196,727	489,042	221,952	84,926	78,524	79,673	97,944	49,957	93,262	88,652	1,644,554
Indiana	5,553	4,174	26,091	27,895	23,744	2,864	2,864	1,043	5,717	6,627	6,043	30,305	148,205
Iowa	29,943	23,258	16,065	16,065	12,780	4,158	6,013	2,626	2,850	6,325	5,273	10,376	141,692
Kansas	2,744	1,019	12,113	16,139	5,903	1,114	2,915	377	1,285	1,936	6,298	3,514	62,337
Kentucky	784	1,905	17,356	33,476	10,319	2,399	2,399	2,184	3,226	10,163	6,727	1,366	92,488
Louisiana	12,082	5,673	3,319	1,390	2,032	424	1,038	20,692	247	4,828	11,454	1,800	64,879
Massachusetts	40,327	47,044	187,012	320,422	167,134	255,337	233,288	53,765	46,725	88,324	46,449	28,611	1,651,338
Maryland	61,941	105,124	172,069	246,547	169,215	101,500	110,902	339,102	42,676	98,035	84,678	32,823	1,974,865
Maine	2,526	4,728	4,712	137,776	63,557	30,193	21,020	9,902	13,013	20,938	6,982	3,024	220,101
Michigan	18,098	9,544	233,613	137,576	87,033	48,127	4,193	9,957	13,896	18,369	62,398	7,676	654,680
Minnesota	2,838	2,137	10,048	23,637	9,985	21,711	3,369	2,237	3,999	4,844	6,509	1,880	93,154
Mississippi	2,064	3,406	1,515	3,928	3,859	489	103	102	81	1,428	9,862	384	27,201
Missouri	6,736	12,040	22,741	96,663	66,638	23,462	11,166	13,398	12,909	24,400	23,296	16,385	329,834
Montana	165	51	215	1,940	1,295	4,592	50	70	120	281	854	34	9,667
North Carolina	17,383	8,137	38,509	35,551	16,557	17,877	27,472	120,238	11,799	65,365	86,855	40,562	486,105
Dakota	317	396	1,442	688	1,163	328	755	32	63	120	18	10	3,972
Nebraska	124	2,980	6,390	10,409	3,409	3,367	4,330	41	7,804	1,818	438	154	41,284
Nevada	28	9	270	261	184	64	64	16	67	25	95	15	498
New Hampshire	853	1,895	9,163	44,745	38,749	35,466	17,605	2,994	5,104	6,928	1,639	298	165,459
New Mexico	80	303	506	1,695	928	108	108	1	132	413	78	13	4,252
New York	240,969	693,881	256,595	592,919	860,733	777,432	734,053	168,436	117,804	147,889	162,288	263,763	4,975,012
Ohio	47,023	268,419	262,286	295,854	207,304	84,618	48,354	41,602	54,465	113,054	166,267	161,049	1,710,295
Oklahoma	551	1,059	8,906	4,862	3,343	656	37	2,079	333	1,513	1,227	491	24,882
Oregon	380	1,517	8,384	1,505	1,240	341	58	3,036	855	855	1,644	167	18,980
Pennsylvania	59,098	44,116	214,190	545,607	395,456	309,839	197,770	47,763	43,249	159,105	39,809	25,039	2,077,691
Rhode Island	19,706	9,111	76,489	67,599	32,018	59,867	54,063	27,153	13,791	23,638	16,340	3,361	405,266
South Carolina	8,314	4,405	6,020	9,473	7,443	1,044	3,669	18,915	761	13,449	36,438	6,963	117,182
South Dakota	33	31	330	3,321	4,243	315	105	36	187	799	22	9747	9,747
Tennessee	3,286	361,795	25,715	25,630	18,693	16,701	5,973	5,489	13,248	5,275	5,609	921	489,692
Texas	20,199	8,113	15,241	7,211	7,801	3,091	608	1,988	4,317	19,239	51,251	19,318	167,120
Utah	189	108	1,737	1,737	1,865	18	18	18	62	19,239	137	22	10,065
Virginia	10,972	43,776	57,593	204,236	141,177	2,852	83,556	22,986	11,231	29,307	49,599	5,008	684,184
Washington	1,458	635	2,371	11,017	29,297	39,263	23,078	3,040	5,191	5,246	1,192	918	131,335
West Virginia	1,508	635	15,012	15,012	6,616	10,072	618	14	4	8,872	1,724	187	34,000
Wisconsin	1,354	2,690	25,984	63,734	33,572	10,510	5,801	3,464	2,085	10,945	8,450	2,985	171,363
Wyconsin	20,546	5,766	23,946	71,266	30,706	32,256	5,201	1,297	11,231	6,417	22,416	1,419	232,221
Young	4	22	80	670	946	325	10	10	280	105	27	10	2,668
Foreign	3,142	6,339	19,582	18,508	17,691	22,457	17,868	14,866	2,460	5,541	21,840	2,068	152,660
Totals	1,803,762	2,809,762	2,915,136	3,818,565	3,232,808	2,603,808	2,068,412	1,290,112	685,620	1,197,169	1,256,216	944,461	24,736,795

NURSERY STOCK TREATMENTS, 1929

Field treatments with carbon bisulphide	6,370 trees
Tank treatments with carbon bisulphide	1,441 rhubarb roots
Hot water treatments	41,583 plants
Fumigation of potting soil with carbon bisulphide	3,109 cubic yards
Potting soil sterilized by steam	29 cubic yards
Area treated with arsenate of lead	2,132,173 square feet
Soil plots treated with carbon bisulphide	53,208 square feet
Soil plots treated with carbon bisulphide emulsion	510 square yards

INSPECTION AND CERTIFICATION COVERING PLANTS THAT
CANNOT BE SHIPPED FREE FROM SOIL

Number inspected, 1929	103,069 plants
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CERTIFICATION OF POTTED PLANTS IN FRAMES

Number inspected, 1929	1,478 plants
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DIGGINGS TO DETERMINE GRUB INFESTATIONS IN FIELDS, FRAMES OR
TREATED PLOTS

In the spring and fall of 1929, soil diggings were made in various classified establishments throughout the state. At establishments which ranked in Class II, according to the provisions of the Japanese beetle quarantine, diggings were made in an attempt to find either Japanese beetles or Asiatic beetles. At Class I establishments, only Asiatic beetles were sought.

In the spring, it will be noted that 89,558 holes were dug with the result that 371 larvae of *Aserica castanea*, three larvae of *Anomola orientalis*, 41 larvae of *Popillia japonica*, together with 1,216 larvae which proved to be of native species, were found.

In the fall, a total of 128,611 holes and 56,682.6 square feet of surface area were dug. The diggings revealed the presence of 99 larvae of *Aserica castanea*, 762 larvae of *Anomola orientalis* and three larvae of *Popillia japonica*. Of the larvae found, 999 were of native species. In addition to the diggings mentioned above, 11,228 holes were made in fields of growing plants and 97,415 square feet of surface area were dug with the result that four larvae of *Aserica castanea*, eight larvae of *Anomola orientalis*, one larva of *Popillia japonica* and 149 larvae, which proved to be of native species were found.

A summary of the entire diggings in 1929 reveals that a total of 229,397 holes were dug and 154,097.6 square feet dug solidly. Considering the fact that a hole has a surface area of two square feet and, dividing this into the 154,097.6 square feet and adding the number

of holes, we get an approximate grand total of 306,445 holes or the equivalent thereof dug in nurseries. A summary of the results would indicate that 474 larvae of *Aserica castanea*, 773 larvae of *Anomola orientalis*, 45 larvae of *Popillia japonica* and 2,364 larvae of native species, or a total of 3,656 larvae, were found.

The diggings were carried on in a very systematic manner, which proved to be quite successful. A chart was designed giving the essential data as to the name and location of the establishment, whether it had been treated with lead arsenate and, if it had been treated while plants were growing therein, the number and varieties were captioned on the reverse side thereof. It also provided a space for the drawing of the plot as well as the number of larvae found and the identity. These forms were executed in duplicate; one copy remaining in the possession of the field office which supervised the diggings and the other copy going to state headquarters.

When a positive find was made, regardless of the identity of the insect, the dimensions from some definite object were given. These grub infestation charts, as they were called, were held until such time as the identities of all of the insects found and noted on that particular chart were received from the entomologist. They were then listed on the grub infestation chart, and the holes which revealed any of the insects in which we were interested were designated.

SUMMARY OF ALL DIGGINGS MADE IN NEW JERSEY IN 1929

Spring

Total number of holes dug	89,558
Total number of larvae found	1,631
Number of <i>Anomola</i> larvae found	3
Number of <i>Aserica</i> larvae found.....	371
Number of <i>Popillia</i> larvae found	41
Number of Negative larvae found.....	1,216

Fall

(Without Treatments of Field Grown Plants)

Total number of holes dug	128,611
Total number of square feet dug	56,682.6
Total number of larvae found	1,863
Number of <i>Anomola</i> larvae found	762
Number of <i>Aserica</i> larvae found	99
Number of <i>Popillia</i> larvae found	3
Number of Negative larvae found	999

Field Grown Plants

Total number of holes dug	11,228
Total number of square feet dug	97,415
Total number of larvae found	162
Number of Anomola larvae found	8
Number of Aserica larvae found	4
Number of Popillia larvae found	1
Number of Negative larvae found	149

Recapitulation

Total number of holes dug	229,397
Total number of square feet dug	154,097.6
Total number of larvae found	3,656
Number of Anomola larvae found	773
Number of Aserica larvae found	474
Number of Popillia larvae found	45
Number of Negative larvae found	2,364

TOTAL NUMBER OF CARLOADS OF EACH CLASS OF SAND, SOIL,
MARL, PEAT, ETC., CERTIFIED FOR SHIPMENT FROM THE
REGULATED AREA OF NEW JERSEY, 1929

<i>Destination</i>	<i>Construction</i>	<i>Molding</i>	<i>Marl</i>	<i>Clay</i>	<i>Glass</i>	<i>Soil</i>	<i>Peat</i>	<i>Totals</i>
Alabama .....	..	..	..	1	..	..	..	1
Arizona	1	..	1	..	..	..	..	2
California	2	1	10	..	..	..	4	17
Colorado .....	..	..	..	..	..	..	1	1
Connecticut	193	472	1	116	17	..	26	825
District of Columbia	15	69	8	1	..	..	..	93
Delaware	19	89	..	..	..	..	2	110
Florida	2	1	..	..	..	..	1	4
Georgia	3	..	..	..	..	..	..	3
Illinois	54	11	3	12	5	..	..	85
Indiana	2	1	14	..	..	..	..	17
Iowa	2	..	..	..	..	..	..	2
Kentucky .....	..	..	1	1	..	..	..	2
Massachusetts	654	816	..	227	22	..	19	1,738
Maryland	128	363	..	21	4	..	1	517
Maine	30	59	..	152	..	..	..	241
Michigan	24	43	1	22	..	..	..	90
Minnesota .....	..	..	1	..	..	..	..	1
Missouri .....	..	..	1	1	..	..	..	2
North Carolina	7	3	..	..	..	..	2	12
North Dakota	1	..	..	..	..	..	..	1
New Hampshire	43	29	..	5	1	..	..	78
New York	724	1,751	2	241	11	..	12	2,741
Ohio	80	74	4	50	5	..	6	219
Oklahoma	4	..	2	..	..	..	..	6
Oregon	3	..	..	..	..	..	..	3
Pennsylvania	631	764	3	60	36	12	10	1,516
Rhode Island	55	112	1	40	4	..	2	214
South Carolina	1	1	2

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<i>Destination</i>	<i>Construction</i>	<i>Molding</i>	<i>Marl</i>	<i>Clay</i>	<i>Glass</i>	<i>Soil</i>	<i>Peat</i>	<i>Totals</i>
Tennessee	10	9	..	2	21
Texas	3	..	13	..	..	..	..	16
Virginia	55	28	3	4	..	..	..	90
Vermont	4	13	..	5	..	..	..	22
Washington	9	5	2	..	..	..	..	16
West Virginia	13	9	..	35	..	..	1	58
Wisconsin	1	4	..	..	..	..	..	5
Foreign	259	418	7	266	21	..	3	974
Totals	3,032	5,144	78	1,263	126	12	90	9,745

NUMBER OF CARLOADS OF EACH CLASS OF SAND, SOIL, MARL,
PEAT, ETC., CERTIFIED EACH MONTH AND TOTALS

<i>Month</i>	<i>Construction</i>	<i>Molding</i>	<i>Glass</i>	<i>Clay</i>	<i>Marl</i>	<i>Peat</i>	<i>Soil</i>	<i>Totals</i>
January	125	215	..	38	8	1	..	387
February	93	193	6	37	2	5	..	336
March	138	300	11	88	3	14	..	554
April	155	356	13	58	3	10	..	595
May	444	689	25	144	4	4	12	1,322
June	376	466	8	98	6	4	..	958
July	215	426	1	127	7	8	..	784
August	304	487	26	180	12	5	..	1,014
September	296	569	3	205	11	10	..	1,094
October	387	703	13	169	6	17	..	1,295
November	343	568	12	86	10	11	..	1,030
December	156	172	8	33	6	1	..	376
Totals	3,032	5,144	126	1,263	78	90	12	9,745

Note.—According to the monthly reports, a total of 9,493 cars of sand, etc., and 90 cars of peat were reported. However, 13,005,657 pounds were shipped in small lots and figuring 80,000 pounds per car, we arrived at the figure of an additional 162 carloads, making the grand total in carlots 9,745.

There was an increase of approximately 29 per cent in the number of carloads of sand, soil, marl, peat, etc., certified for shipment from New Jersey to points outside the regulated area since last year. Last year 7,524 cars were certified as compared with 9,745 cars this year.

NUMBER OF CARLOADS OF MANURE CERTIFIED FOR SHIPMENT
TO EACH DIFFERENT STATE RECEIVING SHIPMENTS DURING
THE YEAR AND TOTAL

<i>State</i>	<i>Carloads</i>
Connecticut	1
Delaware	15
Massachusetts	2
Maryland	42
Maine	4
New York	5
Pennsylvania	8
Virginia	15
Total	92

AVERAGE NUMBER OF MEN EMPLOYED IN EACH DIFFERENT
BRANCH OF THE QUARANTINE WORK AT EACH OFFICE,
EACH MONTH IN 1929 *

	January	February	March	April	May	June	July	August	September	October	November	December
GLASSBORO												
Scouting	0	0	0	0	0	0	3	1	0	0	0	0
Farm products	0	0	0	0	0	0	19	22	2	0	0	0
Nursery & Greenhouse	3	3	3	6	5	8	14	11	17	17	13	9
Administrative	3	3	3	4	4	4	0	0	0	0	0	0
Totals	6	6	6	10	9	12	36	34	19	17	13	9
CAMDEN												
Scouting	0	0	0	0	0	0	6	2	0	0	0	0
Farm products	0	0	0	0	0	0	1	1	0	0	0	0
Nursery & Greenhouse	1	1	1	1	2	3	4	6	5	6	5	3
Administrative	2	2	2	2	2	2	0	0	0	0	0	0
Totals	3	3	3	3	4	5	11	9	5	6	5	3
NEW BRUNSWICK												
Scouting	0	0	0	0	0	0	6	3	0	0	0	0
Farm products	0	0	0	0	0	0	0	0	0	0	0	0
Nursery & Greenhouse	5	8	7	14	14	11	17	19	15	16	12	10
Administrative	3	2	2	3	3	4	0	0	0	0	0	0
Totals	8	10	9	17	17	15	23	22	15	16	12	10
RUTHERFORD												
Scouting	0	0	0	0	0	0	1	1	0	0	0	0
Farm products	0	0	0	0	0	0	2	2	2	0	0	0
Nursery & Greenhouse	7	6	5	15	15	13	12	14	14	15	7	3
Administrative	2	1	2	3	3	3	0	0	0	0	0	0
Totals	9	7	7	18	18	16	15	17	16	15	7	3

* It will be noted that for the months of July, August, September, October, November and December there was an appreciable decrease in the number of men assigned to administrative work. This was due to a memorandum which was promulgated eliminating everyone from the administrative classification excepting those doing strictly this kind of work. The men who were taken from the administrative classification were placed in nursery and greenhouse.

FIFTEENTH ANNUAL REPORT

	January	February	March	April	May	June	July	August	September	October	November	December
DREER'S NURSERY												
Scouting	0	0	0	0	0	0	0	0	0	0	0	0
Farm products	0	0	0	0	0	0	0	0	0	0	0	0
Nursery & Greenhouse	3	2	2	2	2	2	1	1	2	2	2	2
Administrative	0	0	0	0	0	0	0	0	0	0	0	0
Totals	3	2	2	2	2	2	1	1	2	2	2	2

	January	February	March	April	May	June	July	August	September	October	November	December
HEADQUARTERS												
Scouting	0	0	0	0	0	8	49	49	0	0	0	0
Farm products	0	0	0	0	0	2	2	2	0	0	0	0
Nursery & Greenhouse	2	4	3	2	5	2	4	0	9	12	8	7
Administrative	3	3	4	5	4	5	4	4	4	4	4	3
Totals	5	7	7	7	9	17	59	55	13	16	12	10

	January	February	March	April	May	June	July	August	September	October	November	December
TOTAL MEN EMPLOYED AT ALL OFFICES												
Scouting	0	0	0	0	0	8	65	56	0	0	0	0
Farm products	0	0	0	0	0	2	24	27	4	0	0	0
Nursery & Greenhouse	21	24	21	40	43	39	52	51	62	68	47	34
Administrative	13	11	13	17	16	18	4	4	4	4	4	3
Totals	34	35	34	57	59	67	145	138	70	72	51	37

TOTAL AMOUNT OF ARTICLES CERTIFIED AND NUMBER OF BEETLES REMOVED IN NEW JERSEY, JANUARY 1 TO DECEMBER 21, 1929

Total packages of farm produce	1,144,838	Beetles removed	189
Total boxes of cut flowers	596	Beetles removed	16
Total bales of hay, straw and moss ...	20,111		
Total plants certified	24,735,785		
Total carloads of sand, soil, etc.	9,745		
Total carloads of manure	92		
		Total beetles removed ...	205

THE GIPSY MOTH

This report covers the progress made in the tenth year of cooperative exterminative work against the gipsy moth in New Jersey. Scouting was continued as usual and work was done in Piscataway, Hillsboro, Bridgewater, Warren and North Plainfield. All areas were thoroughly scouted. Early in the year, or from July 1 to July 10, 1929, several

larvae and pupae were found in Piscataway Township, in the area where last year's infestation was discovered, but no infestation was found later in the season.

Scouting also was done in the areas where living caterpillars and egg masses had been found on nursery stock from New England by state inspectors in 1922 and 1923. Nothing was found as a result of the scouting as outlined above. The only spraying was done at Interlaken, where one new egg mass was found as a result of a shipment of nursery stock from Roslyn, Long Island. **Two acres and 40 trees** were sprayed. Nursery stock in the quarantined area was inspected as usual but nothing was found.

The work done in the year was highly successful and points to final success in exterminating the insect. In the following table, the results of the past ten years' activities are shown. The colony of one egg mass found at Interlaken, is not included in the tenth years' work because this colony had nothing to do with the original infestation. A more detailed account of the season's work will be published as a department circular.

RESULTS OF SCOUTING AND OTHER WORK

	<i>First Year</i>	<i>Second Year</i>	<i>Third Year</i>	<i>Fourth Year</i>	<i>Fifth Year</i>	<i>Sixth Year</i>	<i>Seventh Year</i>	<i>Eighth Year</i>	<i>Ninth Year</i>	<i>Tenth Year</i>
No. of colonies found	855	216	98	48	9	3*	12	5	1	0
No. of egg masses found (new) ..	3,003,039	909	1,182	723	69	54	646	70	2	0

* Does not include colony of caterpillars found in Duke's Park.

THE EUROPEAN CORN BORER

Federal scouting was continued in New Jersey during the summer and fall of 1929, with the result that three infestations of the European corn borer were found, as indicated in the table below. Only a few caterpillars were found at each place. The scouting covered 14,304 acres in the counties north of and including Mercer, Monmouth and Ocean Counties.

<i>County and Township</i>	<i>Date of Finding</i>	<i>Specimens Found</i>	<i>Resident</i>	<i>Approximate Acreage Scouted</i>
Bergen, New Milford	7/27/29	1	Oser Farm, Haas Farm.....	25¼
Morris, Morris	7/23/29	2	Morris County Welfare Association	30
Morris, Jefferson ...	8/10/29	5	T. R. Search farm	18½

Because of cooperation from the owners of the farms on which the infestations were found, the cost of clean-up work in the spring of 1930 was comparatively small. The State of New Jersey spent \$285.84 and the federal government, \$286.56.

BEE INSPECTION SERVICE

All calls for bee inspection in the year were given attention as soon after they were received as other work would permit. In the fiscal year, 315 apiaries were inspected. In them were 4,430 colonies of bees. Thirty-four were in boxes, 297 had crossed combs and the remainder, 4,371, were in movable comb hives.

In 113 apiaries, 448 colonies were found infected with American foulbrood. Thirty-four colonies infected with European foulbrood were seen in 13 apiaries. Two hundred and four cases of sacbrood were noted.

It will be noted that cases of American foulbrood were more numerous than in the previous year. This is because the greater part of the inspection work was done where the disease was strongly suspected, was known to exist or was reported by beekeepers.

European foulbrood, which was once a serious handicap to beekeeping in certain parts of New Jersey, has become a negligible factor in the industry. This situation is a result, in part at least, of the introduction of better bee stock and the adoption of better beekeeping methods as an outcome of the educational campaign, which has been carried on simultaneously with bee inspection.

Sacbrood, although found in a large number of colonies of bees, still is not of great economic importance in this state, since the infection in individual colonies is small and causes no appreciable loss. It does, however, give the less experienced beekeeper considerable anxiety until he learns to distinguish it from foulbrood.

Through one cause or another, 117 cases of American foulbrood were not eliminated by the owners. Hence, it became necessary to destroy the bees and the combs in these hives. The number of samples

of dead bee brood received for microscopic examination steadily increases. Thirty-seven such samples were examined in the period covered by this report.

QUEEN REARERS' CERTIFICATES

Three queen-rearing apiaries were examined, found free of disease and certified, in the year, as follows: Albert G. Hann, Glen Gardner, 2 apiaries, May 5 and July 21 and 22, 1930 and July 10, 1929; James C. Crawford, R. D. 6, New Brunswick, July 5, 1929; Donald A. Wyckoff, R. D. 5, New Brunswick, June 30, 1930.

To safeguard these queen-rearing apiaries, all discoverable colonies of bees within a radius of two miles of each apiary are examined twice a year.

WARNING CIRCULAR

Bee diseases are often spread from infected hives, where bees have died during the winter, when other bees steal the infected honey and carry it home, where it eventually gets into the feed of the larvae. To decrease this possible source of spread of bee diseases, a circular letter urging that such removal of honey be prevented, was sent to all beekeepers on the mailing list. In this letter, was also a request for the names of other beekeepers. This check of the mailing list of beekeepers' names resulted in the discard of about 300 and the addition of several hundred. There are now more than 4,000 names on this list.

EDUCATIONAL

Better beekeeping results in better bee disease control. Through the cooperation of the New Jersey Department of Agriculture, the county agents and the New Jersey Beekeepers' Association, six field meetings were held, one at Branchville, July 9, at which 50 persons were present; one at Morganville, August 22, at which 18 persons were present; one at Middlebush, September 12, at which 18 persons were present; one at Caldwell, September 21, at which 24 persons were present; one at Leonia, May 24, at which 30 persons were present and one at Lebanon, June 13, at which 54 persons were present.

Twenty-five lectures were given at Newton, Morristown, Hackensack, Belvidere, Bridgeton, Cape May Court House, Moorestown,

Mount Holly, New Brunswick and Flemington. An exhibit of bee-keepers' apparatus and fruit to show the benefit from bees as pollinators was set up at the Armory, Trenton, for Agricultural Week.

WHITE PINE BLISTER RUST CONTROL

During the year 1929-1930, blister-rust control activities centered about the inspection of sites of recent plantations of stock distributed for reforestation purposes by the Department of Conservation and Development. These activities consisted of examinations of sites to



FIG. 21

To keep out white pine blister rust, no currants or gooseberries are allowed to grow near this 23-year-old plantation of white pine trees

determine disease possibilities and educational work. The presence or absence of ribes species, the presence or absence of older white pines and whether or not pines or ribes were infected were determined in connection with the inspection work. In connection with the educational work, an attempt was made to tell each owner of white pine who was visited, facts concerning the disease, how it appears, how it spreads and the method of control by the removal of nearby ribes.

Sixty-eight sites were inspected. They represent a total of 108,000 seedlings, 111 acres of plantings ranging from five to 25 years of age and 370 ornamental trees. Twenty-five of the sites had ribes species growing nearby. These ribes species, of which there were 434 plants, included flowering currant (spice bush), European black currant, American black currant, common garden currant and gooseberry plants. No infections were found either on ribes or pines.

Observations were made on the general distribution of white pine (native) and wild ribes species in the northern part of the state. The work has been partially completed in Sussex, Warren and Morris counties and indications are that ribes and native white pine do not occur frequently enough and near enough together to permit a general spread of the disease. *Ribes americanum* (American black currant) can be found growing along the road in fence rows in Warren and Sussex counties, but seldom in close proximity to white pine.

The white pine weevil was observed to be generally prevalent and destructive in the northern part of the state. Questions arising over the control of this insect (weevil damage being often mistaken for blister rust) prompted the writing of Circular No. 177, "An Annotated Bibliography on the White Pine Weevil for Blister Rust Workers and Others," which relates the most up-to-date information on the life history and control of this pest. Circular No. 170, "White Pine Blister Rust in New Jersey," also was prepared during the year and distributed to interested persons. Six museum jars containing blister rust specimens were sent as educational material to boy scout camps. An educational exhibit on white pine blister rust was displayed during Agricultural Week at the Trenton Armory.

Maps showing the locations of the pine plantings mentioned above have been prepared together with a card of information relating to the conditions surrounding the sites, the presence of Ribes, etc.