1925

STATE OF NEW JERSEY

DEPARTMENT OF AGRICULTURE

WILLIAM B. DURYEE, Secretary

BULLETIN

No. 45

Tenth Annual Report

of the

New Jersey State Department of Agriculture

Trenton, New Jersey, September, 1925

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CONTENTS

FOREWORD

I have the honor to transmit the Tenth Annual Report of the State Department of Agriculture for the year ending June 30, 1925. This report, which includes the Secretary's statement and the reports of the three Bureaus, shows the high efficiency attained under Secretary Alva Agee. The creation of the structure of the Department, the selection of personnel and the effective functioning of the organization, show the wisdom and foresight of those who devised the organic law, the State Board which has controlled policy and the Secretary who now concludes his period of service to New Jersey. The farmers of the State have in the Department of Agriculture a responsive organization whose recorded achievements and continued performance are worthy of their consideration.

WILLIAM B. DURYEE

Tenth Annual Report of the New Jersey State Department of Agriculture

REPORT OF THE SECRETARY

ALVA AGEE

The Tenth Annual Report of the State Department of Agriculture is herewith submitted. For the sake of the record the statement should be made that the first report covered only the four months intervening between the date of the organization of the Department, the first of July, 1916, and the close of the State's fiscal year, October 31, 1916. The Third Annual Report covered only eight months, beginning with the fiscal year and closing June 30, when the State made a change, beginning its fiscal year July 1. It thus comes about that we have reports of work within ten fiscal years, and yet performed in a period of nine years.

PHYSICAL DEVELOPMENT OF THE DEPARTMENT

My retirement as Secretary of the Department after nine years' work in its organization and development under the guidance of the State Board of Agriculture may justify a brief review. The new Department was given two rooms in the State House, and to-day it occupies 3,300 feet of floor space in the new office building. The use of space in this world is not conclusive evidence of efficiency, but I carry away with me some assurance that the State House Commission, which allots space to its Departments, the Legislatures, which grant appropriations, and the farmers of our State, whom the Department tries to serve, believe that it is the earnest purpose and effort of the State Board of Agriculture to use its facilities to the utmost for the purposes for which they are granted.

A SENSE OF PERMANENCE

Doubtless there are people for whom a sense of security dulls effort, but, on the other hand, the best work can only be done by those who give all of their attention to their duties, and none to a con-

scious effort to retain the chance of doing work. The Civil Service Commission has cooperated heartily with the State Board of Agriculture in the effort to find the right men and women to do the State's work in this Department. The effort has been to find people who had fitness for the particular tasks, and ambition to make the most of their tasks, and then it has been the duty of the Secretary to strengthen the assurance that the State would take care of those that made it their business to serve it. I respectfully submit that the scheme of organization that provides that chosen representatives of organized farmers should guide the State's Department of Agriculture and direct its policy, regardless of any consideration other than the sort of service that the staff of any great corporation is bound to give, is sound and should be enduring. The members of the Board are elected by chosen representatives of county boards of agriculture, pomona granges and State-wide agricultural associations to do the work that should be performed by the State in the interest of the farmers.

DUTY OF THE STATE

The work that the State should do for agriculture is limited, but it is extremely important. The farmer on his farm is the one who most largely works out his own destiny. In association with fellow farmers in various organizations many things are done that the individual could not do alone. Beyond this are the great fields of control work, the gathering of statistics, the establishment of grades and certification of quality of products, the gathering and distribution of market information, assistance in educational work, etc., that are within the province of the State. The loss to producer and consumer would be incalculable if the Government did not intervene in the interest of those who supply us with food to do very much that would otherwise necessarily be left undone.

APPROPRIATIONS

It was pointed out in the address of the President of the State Board of Agriculture in the last annual convention that a very large part of the appropriation granted to the Department is not directly and primarily in the interests of the farmer. It is necessary that such a menace to the trees of the State as has been presented by the gipsy moth should be wiped out, and the Department of Agriculture has the organization to do such work efficiently. The appropriation to stamp out tuberculosis is more important to the children of our cities and

towns than it can be to the individual producer of milk, although the latter profits by the testing of his cattle, in whose results he shares the loss with the State.

The total appropriation for the coming fiscal year is $422,170. It is a compliment to the State Board of Agriculture that Appropriation Committees believe that these eight representative farmers plan their budget in the interest of the same economy that they use in their own business affairs, and that the judgment of these men is accepted on the basis of past performances. In the last report that I shall make as Secretary of the Department of Agriculture, I ask that it be made a matter of record that the Governors of our State, the Appropriation Committees and other members of the Legislature, and the State Comptroller's office, have given the State Board of Agriculture and its Secretary such cooperation that any failure to reach the goal set by the Department for itself can rest only upon the Department, which has realized its inability to attain some desired results more keenly than any others could have done.

BUREAU REPORTS

This report necessarily is written prior to the receipt of reports from the various Bureaus. The latter always form the greater part of the Annual Report, because the most of the work of the Department is done through these Bureaus. It is not unfitting, under the circumstances, that I say that the efficiency of the Bureau chiefs and their staffs of workers has made my own duties relatively light and pleasant in a most marked degree.

RESIGNATION

When the Board held its regular meeting in April the following communication was presented:

April 21, 1925.

To the New Jersey State Board of Agriculture:

GENTLEMEN—The present fiscal year will complete the ninth year of the State Department of Agriculture, whose organization and growth in service to the State have interested me very much. I do not believe that any administrative officer ever had a more helpful and loyal Board under which he could serve with a sense of mutual understanding.

I have worked pretty hard all my life, and from now on my health will be better if I have more time for rest and recreation. In discussion of the matter with you in the last year, your suggestion that I solve the problem by leaving more of the work to others has been kind, but responsibility goes along with any task. I think our organization is soundly based, and that makes it easier to ask for acceptance of my resignation to become effective June 30. The hard part of it all to me is a severance of official relations and the loss of personal touch with so many people whom I number among my friends. The support of the farmers in

their organizations and individually, has made possible whatever we have accomplished. The industry and loyalty of your staff of workers have been admirable.

I appreciate your kindness in placing the administrative work of the Department in my hands nine years ago, and now I shall appreciate your kindness in acceptance of this resignation. May I have your approval of the use of June as a vacation month, and prepare to leave the last of May?

Again expressing the deep obligation under which I rest to all the members of the Board, I remain,

Sincerely yours,

(Signed) ALVA AGEE.

The resignation was accepted, and W. B. Duryee was unanimously chosen to fill the vacancy.

PUBLICATIONS

The publications issued by the Department during the past fiscal year are as follows:

BULLETINS

No.
41. Ninth Annual Report of the New Jersey State Department of Agriculture.
42. Official Proceedings of the Tenth Annual State Agricultural Convention; Addresses at the Meeting of the New Jersey State Federation of County Boards of Agriculture.
43. The State Potato Association and the State Alfalfa Association.
44. Observations on Some Adaptable New Jersey Crops.

CIRCULARS

74. The Milk Dealers' Licensing and Bonding Law.
75. A Graphic Summary of New Jersey's Changing Agriculture, by Counties.
76. The Oil and Blister Beetles of New Jersey.
77. Farmers' Roadside Markets.
78. Forecasting Prices of New Jersey White Potatoes and Sweet Potatoes.
79. Results of the Fourth Year's Work Against the Gipsy Moth in New Jersey.
80. The Fruit and Vegetable Packing Industry in New Jersey.
81. County Boards of Agriculture, Granges and State Agricultural Organizations.
82. Directions for the Treatment of European Foulbrood.
83. Directions for the Treatment of American Foulbrood.
84. Costs and Practices of Growing Alfalfa in New Jersey.
85. Roster of County Boards of Agriculture, Granges, and State Agricultural Organizations.
86. Retail Margins on Farm Produce in Trenton, New Jersey.
87. Beetles of the Genus Conotrachelus Known to Occur in New Jersey.
88. The Relationship of Production and Movement of Fruits and Vegetables in the United States to the Distribution of New Jersey's Produce.
72. (Revised) Requirements and Rules for the Inspection and Certification of New Jersey Second-Crop Seed Potatoes, as Adopted by the New Jersey State Potato Association and the New Jersey State Department of Agriculture.

REPORT OF THE BUREAU OF ANIMAL INDUSTRY

J. H. MCNEIL, *Chief*

SWINE DISEASE CONTROL

The work of preventive inoculation of swine against cholera has been carried out during the year by both Bureau and private veterinarians, as will be noted from the summary submitted below, and the number treated has gradually decreased during the past three years.

We have, as in previous years, given attention to all requests that have been received, and we are making an attempt to give efficient service along all lines that pertain to animal disease prevention and control.

HOG CHOLERA INOCULATION

Summary by Months—July, 1924—June, 1925

(Treated by Bureau and Private Veterinarians)

	Bureau Veterinarians		*Private Veterinarians*	
	Single	*Double*	*Single*	*Double*
July	40	520	..	325
August	8	301	69	1070
September	9	290	17	65
October	12	197	274	1136
November	..	22	37	656
December	..	133	77	369
January	5	41	14	134
February	..	23	37	453
March	7	124	..	429
April	..	63	6	251
May	40	865	36	49
June	..	889	37	1201
Totals	121	3468	604	6138

TOTAL SINGLE	725
TOTAL DOUBLE	9,606
GRAND TOTAL	10,331

HOG CHOLERA INOCULATION

Summary by Counties

(Treated by Bureau and Private Veterinarians—July, 1924—June, 1925)

	Bureau Veterinarians		*Private Veterinarians*	
	Single	*Double*	*Single*	*Double*
Atlantic	..	553	..	..
Bergen	..	..	..	..
Burlington	3	48	..	46
Camden	..	97	10	87
Cape May	..	359	..	..
Cumberland	..	..	249	276
Essex	..	122	..	451
Gloucester	..	8	203	4,535
Hunterdon	..	21	..	82
Mercer	62	86	106	239
Middlesex	..	..	1	118
Monmouth	11	1,573	9	106
Morris	..	50	..	..
Ocean	40	387	..	..
Passaic	..	..	..	..
Salem	..	164	26	197
Somerset	5	..	..	..
Sussex	..	..	..	..
Union	..	..	..	1
Warren	..	..	..	..
Totals	121	3,468	604	6,138

TOTAL SINGLE 725
TOTAL DOUBLE 9,606

GRAND TOTAL 10,331

HOG CHOLERA INOCULATION

Comparison of Summaries 1920-1925

Treated by Bureau Veterinarians	1920–21	1921–22	1922–23	1923–24	1924–25
Double	4,005	3,954	2,999	3,461	3,468
Single	529	565	164	215	121
	4,534	4,519	3,163	3,676	3.589
Treated by Private Veterinarians					
Double	10,217	7,843	9,576	7,236	6,138
Single	772	620	614	810	604
	10,989	8,463	10,190	8,046	6,742
Totals					
Double	14,222	11,797	12,575	10,697	9,606
Single	1,301	1,185	778	1,025	725
	15,523	12,982	13,353	11,722	10,331

PASTURE DISEASE OR FORAGE POISONING

Pasture disease, or forage poisoning, has not occurred as a serious epizootic for several years, although we do receive reports of cases occurring as result of feeding ensilage and moldy food or contracted while grazing on pastures in the eastern and southeastern sections of the State.

Protective inoculation against this disease was practiced as indicated in the following summary:

	Ocean County	Mercer County	Hunterdon County	Burlington County	Total
September, 1924	44	..	..	..	44
November, 1924	..	8	..	4	12
January, 1925	..	..	3	..	3
Totals	44	8	3	4	59

STALLION REGISTRATION

A comparison of the summaries from year to year of the stallions registered in New Jersey shows a steady decrease. Less than half as many stallions were registered this year as compared with last, and we predict that during the next fiscal year we will have fewer registrations to report than have been reported for the year just closed, as very few replacements are being made for the animals which become too old for service.

Breed	1921	1922	1923	1924	1925
Percheron (Registered)	26	20	20	18	11
Standardbred (Registered)	4	4	4	5	2
Clydesdale (Registered)	3	3	3	2	1
Belgian (Registered)	1	1	1	..	..
Suffolk (Registered)	3	1	2	1	..
Thoroughbred (Registered)	5	6	4	3	2
German Coach (Registered)	6	1	1	1	..
Arabian (Registered)	..	..	..	..	1
Jacks (Registered)	4	3	2	2	1
Standardbred (Non-registered)	5	5	4	3	..
Suffolks (Non-registered)	1	1	1	1	..
German Coach (Non-registered)	1	..	..	..	..
Jacks (Non-registered)	1	2	2	2	..
*Grade Drafts	17	16	13	12	7
Totals	77	63	57	50	25

* Includes grade Percherons, Belgians and Clydesdales.

STALLION REGISTRATION BY COUNTIES

County	1921	1922	1923	1924	1925
Burlington	6	6	6	4	2
Camden	2	2	1	2	..
Cumberland	6	3	4	3	2
Hunterdon	14	12	12	12	8
Mercer	3	3	1	1	1
Middlesex	2	2	4	3	2
Monmouth	7	7	8	5	3
Morris	8	3	3	4	..
Salem	7	6	5	3	2
Somerset	5	4	1	3	2
Sussex	4	6	4	3	..
Union	1	..	..	..	..
Warren	12	9	8	7	3
Totals	77	63	57	50	25

GLANDERS

Our records indicate that but few cases of glanders have been reported during the year. The number of horses used in the traffic between Jersey City and New York has decreased from year to year, as will be noted from the following summary:

GLANDERS—1924-1925

	Negative	*Positive*
July	8	..
August	2	..
September	14	1
October	13	..
November	2	..
December	25	..
January	1	..
February	79	..
March	14	..
April	1	..
May	12	..
June	3	..
Totals	174	1

GLANDERS

Comparison of Summaries—1920-1925

	1920-21	*1921-22*	*1922-23*	*1923-24*	*1924-25*
Negative	460	277	208	454	174
Positive	70	10	4	2	1
Suspicious	2				
Totals	532	287	212	456	175

New York and New Jersey Traffic

Negative	3,087	5,493	4,208	2,754	2,435
Positive	4				
Totals	3,091	5,493	4,208	2,754	2,435

ANTHRAX

No serious outbreak of this disease has occurred for several years, although we do have reports of sporadic cases outside of the regular anthrax districts. In all instances the reports are investigated and proper prophylactic treatment is instituted.

The records submitted show that a larger number of animals were treated this year than at any time during the past five years.

Year	*Cattle*	*Horses*	*Total*
1925	726	102	828
1924	497	46	543
1923	862	50	912
1922	985	52	1,037
1921	1,238	32	1,270

FOOT-AND-MOUTH DISEASE

It is to be noted that foot-and-mouth disease has prevailed in the States of California and Texas since early in the year 1924. Quarantine orders and restrictions have been placed in order to protect the livestock industry of New Jersey, but through the efficient work of the Federal Bureau of Animal Industry, cooperating with the Live Stock Sanitary Boards of the respective States, the disease has been confined within narrow limits.

POULTRY DISEASE CONTROL

In the latter part of August and in September, 1924, unusual losses occurred in poultry shipped from the West consigned to the Newark, Jersey City and other terminal yards. These losses continued and later affected the wholesale poultry establishments in the larger cities, causing serious losses, and necessitated the quarantining and closing of many of the poultry slaughtering establishments until a thorough cleaning and disinfection had been accomplished.

The actual work of handling this situation was commenced about the middle of December, when an investigation was made by the Bureau acting on this report, and the State Board of Agriculture authorized the placing of a quarantine restricting the entrance of poultry and poultry containers into the State of New Jersey.

The application of this quarantine gave the Bureau an opportunity to supervise the cleaning of the poultry yards at the railroad terminals and slaughtering establishments and control of the movement of live poultry, placing the handling of same on a more satisfactory and sound basis, and in a large measure prevented the introduction of the infection into the poultry flocks of the State.

The original quarantine remained in force and effect until January 14, when it was amended to permit the entrance of baby chicks and poultry for exhibition or breeding purposes providing United States Bureau of Animal Industry Order 291 and its amendments were complied with. Market poultry for immediate slaughter was permitted to enter providing it was not diseased. Coops, crates and other containers were required to be thoroughly cleaned and disinfected immediately before being used. This modification practically lifted the quarantine on market poultry, but was unsatisfactory in its operation and was further modified under date of January 17 to meet conditions and prevent the entrance of market poultry and containers, either occupied or empty, from the cities of Scranton, Wilkes-Barre, New York and Philadelphia.

The Bureau operated under this quarantine until February 14, when fowl pest was diagnosed in nine counties of Indiana, the cities of Cleveland, in Ohio, and Chicago, in Illinois. Inasmuch as considerable poultry originates in these infected centers it was found necessary to again modify the quarantine to include the States of Indiana, Ohio and Illinois. These restrictions remained in force and effect until April 9, when they were lifted on all points previously quarantined excepting New York City and Philadelphia. These two cities remained under quarantine until June 30, when all restrictions were lifted and poultry was permitted to move in accordance with the United States Bureau of Animal Industry Order 291 and its amendments.

In order to strengthen the quarantine orders and to regulate the handling of poultry, amendments to existing laws were arranged and a new bill presented to the Legislature, which were adopted and approved by the Governor on March 13, 1925. These amendments and bills after passage became known as Chapters 80, 81 and 82 of the Laws of 1925.

In order to maintain the inspection which was immediately instituted carrying out the provisions of the acts, the Legislature appropriated $3,500 for the remainder of the current year, and $7,500 for the coming fiscal year. These appropriations are to be expended in

the maintenance of quarantines and regular inspection of the poultry terminals in the cities of Atlantic City, Asbury Park, Elizabeth, Newark, Jersey City, Paterson and Passaic, where carlots of poultry arrive from the West and are distributed not only to points in this State but also to the City of New York.

The Bureau also maintains regular inspection of the local poultry markets, as well as of the flocks throughout the State, as a measure to prevent the spread of any infectious disease of poultry that might gain entrance to the State and not only destroy the flocks but cause an embargo to be placed on the exportation of baby chicks, birds for breeding purposes and market poultry, including broilers.

It is planned to continue the work as outlined and to enlarge to meet any emergencies that might come up in an endeavor to insure protection to the local poultry industry, which is second only to the dairy industry.

The following is a summary by months of the cars of poultry from the various States released after inspection:

	MONTH RELEASED					
State of Origin	*February*	*March*	*April*	*May*	*June*	*Total*
Alabama	1	..	13	11	6	31
Arkansas	..	3	29	30	25	87
Colorado	..	..	4	1	4	9
Georgia	..	1	15	27	21	64
Illinois	8	..	7	45	44	104
Indiana	13	..	13	50	69	145
Iowa	1	..	10	5	23	39
Kansas	2	9	55	64	50	180
Kentucky	7	6	13	21	10	57
Louisiana	..	..	..	..	5	5
Maryland	..	..	4	8	10	22
Minnesota	..	1	5	6	5	17
Mississippi	1	1	11	12	7	32
Missouri	7	45	114	131	106	403
Nebraska	13	29	60	90	67	259
North Carolina	..	5	24	21	18	68
North Dakota	..	..	2	..	..	2
Nevada	..	..	..	7	..	7
Ohio	9	..	3	23	36	71
Oklahoma	1	..	50	70	36	157
Pennsylvania	..	..	..	..	29	29
South Carolina	..	1	3	4	6	14
South Dakota	..	..	2	7	11	20
Tennessee	..	8	128	171	65	372
Texas	..	8	28	49	48	133
Virginia	..	1	6	7	5	19
Washington	..	..	..	..	1	1
Wisconsin	..	..	..	2	3	5
Wyoming	..	..	..	1	1	2
Totals	63	118	599	863	711	2354

TUBERCULOSIS

The control and eradication of tuberculosis in cattle and other livestock, including poultry, have claimed the major portion of the time of the staff of the Bureau of Animal Industry during the past fiscal year. We have received assistance and support in this work from all the agencies representing agriculture, especially those concerned with animal industry, together with the State and local boards of health.

The tuberculosis eradication work has advanced to a point where livestock breeders and dairymen realize that it is not a good business proposition to maintain diseased herds. The demand for milk from tuberculosis-free cattle has rapidly increased, and it is necessary to restrict the control measures to those which permit of the greatest amount of accomplishment with a minimum expenditure of funds.

The volume of tuberculin testing being conducted over the entire United States, and the slaughter of the reactors, makes it extremely hard to obtain replacements for the animals lost through slaughter. In some sections this problem has become very acute, necessitating the payment of advanced prices for good dairy animals free from disease. This problem can be partially met, if the facilities are at hand, by the owners of dairy animals retaining the offspring of their best milkers to raise for the market or to replace those that have become unprofitable in the dairy or breeding herd. We believe that young stock can be raised profitably, carrying out such procedure, especially in sections where it is impossible to till the rough land.

Considerable progress has been made in cooperation with the representatives of the Federal Bureau in enforcing the proper technique covering the tuberculin testing of dairy and breeding cattle for interstate shipment. From our experience and observation we know that in the past tuberculin tested cattle have entered and, although maintained in proper quarantine, have reacted to subsequent tuberculin tests applied within the State. These losses in most instances have been borne directly by the dairymen and have made them more cautious in the purchase of herd additions and insistent that they come from herds under supervision or from modified accredited areas; otherwise they purchase on a sixty- or ninety-day retest guarantee.

We hope that the time is not far distant when Federal and State regulations can be formulated and enforced prohibiting the inter-

state movement of any animals for dairy or breeding purposes which do not originate in herds under State or Federal supervision.

Considerable work has been done throughout the State in an attempt to tuberculin test all the animals within a circumscribed area, but we do not believe that substantial progress will be made along these lines until the general public will request a modification of existing statutes and the enactment of new laws requiring the tuberculin testing of all beef, dairy and breeding animals used in the production of meat or milk.

At the close of last fiscal year, June 30, 1924, there were in New Jersey under supervision 1,540 herds, comprising 25,825 animals. At the close of this fiscal year, June 30, 1925, there are 2,214 herds, comprising 32,568 animals, or an increase of 43.76 per cent in the number of herds and 26.11 per cent in the number of animals.

During the past twelve months the Bureaus tested 49,675 animals, with 4,133 reactors, or a percentage of reactors of 8.32 per cent of the total number of animals tuberculin tested in herds under State and Federal supervision.

The appropriation for the payment of indemnities during the past fiscal year was $100,000, and a sum sufficient to match this amount was allotted by the Federal Government.

During 1923-24 indemnity was paid for 3,912 reactors, 488 purebreds and 3,424 grades. During the year 1924-25 indemnity was paid for 4,139 reactors, 336 purebreds and 3,803 grades.

During the year 1923-24 the percentage of reactors on initial tests was 29.09 per cent, with 12,988 animals tested and 3,789 reacting. During the year 1924-25 the percentage of reactors on initial tests increased to 30.32 per cent with 9,402 tested and 2,851 reactors.

The percentage of reactors on imported cattle or from untested herds within the State which have been added to herds under supervision during the fiscal year 1923-24 was 2.67 per cent, or 100 reactors of 3,735 animals tested. For the year 1924-25 we have tested 6,113 cattle, with 357 reactors, or a percentage of 5.84 per cent.

Other tests include first, second or third retests of herds already under supervision, and during the fiscal year 1923-24, 18,990 animals were tested, with 407 reactors, or a total percentage of reactors on such tests of 2.14 per cent. During the fiscal year 1924-25, 33,908 animals were tested, with 947 reactors, or a percentage of 2.79 per cent. The increase in the percentage of reactors for this year has been very slight.

A summary of tuberculin testing of herds of cattle under the State and Federal accredited-herd plan for the entire United States during the period of July 1, 1924, to June 30, 1925, is as follows:

Number of herds tested	607,345
Number of cattle tested	7,000,028
Number of reactors	214,481
Percentage of reactors	3.06 per cent

A summary of the work of testing herds of cattle under this plan for the State of New Jersey during the same period is as follows:

Number of herds tested	2,832
Number of cattle tested	49,675
Number of reactors	4,133
Percentage of reactors	8.32 per cent

At the close of the fiscal year, June 30, 1925, our records show the following:

Total number of herds in New Jersey under supervision	2,214
Total number of cattle in New Jersey under supervision	32,568

COMPARISON OF TOTAL NUMBER CATTLE TESTED UNDER ACCREDITED HERD PLAN

Fiscal Years 1923–24 and 1924–25

	Pure-Bred Fiscal Years		*Grades* Fiscal Years		*Total Animals* Fiscal Years	
Initial	*1923–24*	*1924–25*	*1923–24*	*1924–25*	*1923–24*	*1924–25*
Tested	1,626	910	11,362	8,744	12,988	9,654
Reacted	449	148	3,340	2,681	3,789	2,829
					Percentage of reactors	
					29.09%	29.30%
Additions						
Tested	898	784	2,837	5,329	3,735	6,113
Reacted	7	23	93	334	100	357
					Percentage of reactors	
					2.67%	5.84%
Other Tests						
Tested	8,334	11,460	10,656	22,448	18,990	33,908
Reacted	87	170	320	777	407	947
					Percentage of reactors	
					2.14%	2.79%
Totals						
Tested	10,858	13,154	24,855	36,521	35,713	49,675
Reacted	543	341	3,753	3,792	4,296	4,133
					Percentage of reactors	
					12.03%	8.32%

COMPARISON OF ACCREDITED HERDS BY COUNTIES

Fiscal Years 1923–1924 and 1924–1925

County	*Herds Under Supervision Fiscal Years*		*Fully Accredited Fiscal Years*	
	1923–24	*1924–25*	*1923–24*	*1924–25*
Atlantic	3	2	1	..
Bergen	6	37	2	4
Burlington	125	173	16	49
Camden	3	8	1	2
Cape May	22	45	1	12
Cumberland	109	131	41	67
Essex	41	39	3	2
Gloucester	79	99	34	48
Hunterdon	135	216	41	85
Mercer	97	150	30	49
Middlesex	76	65	43	17
Monmouth	45	95	7	47
Morris	89	161	21	40
Ocean	16	43	1	8
Passaic	22	85	1	2
Salem	35	94	18	26
Somerset	166	191	58	95
Sussex	34	40	3	6
Union	12	18	3	2
Warren	425	522	17	139
Total	1,540	2,214	342	700
Temporarily suspended			1	10
	8 795 P. B. 17,030 Gr.	10,411 P. B. 22,157 Gr.	4,497 P. B. 2,960 Gr.	5,615 P. B. 4,740 Gr.
	25,825	32,568	7,457	10,355

TOTAL PERCENTAGE OF INITIAL TESTS BY COUNTIES

From July 1, 1924, to June 30, 1925

ACCREDITED HERDS

COUNTIES	Number Herds	Number Tested		Number Reactors		Percentage Reactors		Total Animals Tested	Total Animals Reacting	Total Percentage Reactors
		Purebred	Grade	Grade	Purebred	Grade	Purebred			
Atlantic	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bergen	29	4	539	1	211	25	39	543	212	39
Burlington	57	111	946	20	397	18	41.96	1,057	417	39.45
Camden	3	.....	33	.....	23	.....	69.69	33	23	69.69
Cape May	45	4	209	1	26	25	12	213	27	12.67
Cumberland	35	39	243	4	67	10	27.57	282	71	25.17
Essex	1	.....	44	.....	18	.....	40.9	44	18	40.9
Gloucester	27	16	143	1	21	6.25	14.68	159	22	13.83
Hudson	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hunterdon	104	163	653	29	159	17.79	24	816	188	23
Mercer	69	144	476	18	160	12.5	33.6	620	178	28.7
Middlesex	22	18	90	4	27	22	30	108	31	28.7
Monmouth	25	76	194	4	5	5	2.57	270	9	3.33
Morris	63	82	724	.....	182	.....	25	806	182	22.58
Ocean	28	3	46	.....	4	.....	8.69	49	4	8.16
Passaic	69	30	1,124	6	510	20	45.37	1.154	516	44.71
Salem	58	48	519	10	201	20.8	38.7	567	211	37
Somerset	50	91	354	21	121	23.07	34	445	142	31.9
Sussex	9	18	151	3	66	16.67	43.7	169	69	40.8
Union	8	1	338	.....	86	.....	25	339	86	25.36
Warren	220	88	1,640	25	420	28.4	25.6	1,728	445	25.75
Totals	920	936	8,466	147	2,704	15.7	31.93	9,402	2,851	30.32

ACCREDITED HERD WORK

Tested by U. S. B. A. I. Veterinarians	Initial					Additions					Other Tests				
	Tested			Reactors		Tested			Reactors		Tested			Reactors	
	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.
1924—July	2		19		5	2		9			9	1	137		
August	1	7	6	1	2	2	2	4			8	45	71		
September						1	4	11			4	106	11		
October											9	258	66	3	2
November						3		26			11	37	459		4
December	7	10	114		6	1	17				4	206	3	2	
1925—January						2		4		1	8	38	102		4
February						4	3	14			9	67	121		1
March						1		1		1	5	159	34	6	
April	14	5	22			1		7			12	290	125	6	3
May											13	323	97	1	
June	1	4	6		1	1	5				5	84			
Totals	25	26	167	1	14	18	31	76		2	97	1,614	1,226	18	14
Percentage of Reactors				3.84	8.38					2.63				1.11	1.14
Average percentage				7.77										1.12	

Tested by N. J. B. A. I. Veterinarians	Initial					Additions					Other Tests				
	Tested			Reactors		Tested			Reactors		Tested			Reactors	
	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.
1924—July	60	57	479	7	119	40	89	230	5	10	144	950	1,217	13	37
August	67	33	760	9	208	27	58	238	2	3	98	777	771	13	46
September	62	39	715	20	238	17	7	128		3	84	489	672	5	6
October	60	123	948	19	370	48	70	557	4	43	46	821	3,146	12	82
November	37	20	508	14	193	54	99	605	2	74	134	661	1,512	14	115
December	28	25	286	1	59	33	27	445	1	34	81	399	832	3	47
1925—January	35	18	482	5	204	24	51	471	1	10	52	242	1,177		58
February	60	39	875	1	304	20	5	276		18	68	475	975	5	37
March	91	99	686	7	189	72	55	457	2	25	256	1,401	2,428	31	114
April	74	69	499	18	111	65	64	453	1	33	189	1,023	2,013	11	52
May	66	169	437	14	124	50	92	338		33	202	1,081	3,916	23	59
June	189	77	1,166	12	341	31	40	299	1	9	176	1,126	1,835	19	33
Totals	829	766	7,841	127	2,460	481	657	4,497	19	295	1,530	9,445	20,494	149	686
Percentage of Reactors				16.57	31.37				2.89	6.55				1.57	3.34
Average percentage				30.05					6.09					2.78	

ACCREDITED HERD WORK

Tested by Accredited Veterinarians	Initial					Additions					Other Tests				
	Tested			Reactors		Tested			Reactors		Tested			Reactors	
	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.
1924—July	2	1	12		2	13	10	67		4	10	72	38	1	1
August	2	2	14			7	8	14		1	8	9	67		6
September	6	42	44	13	6	9	6	59		1	7	10	62		16
October	12	12	131	4	18	12	4	93		6	9	84	94	1	14
November	5	5	33		13	7	2	51		5	1		19		5
December	1		5			8	1	39							
1925—January	1		2			8	4	56	1	1					
February	7	9	116		50	5	2	22		1	1	1	5		
March	5	14	50	2	20	5	21	23			3	18	47	1	8
April	12	12	103	1	78	9	13	56	3	9	18	37	111	1	6
May	13	15	108		17	13	8	98		6	22	75	130		6
June	7	4	18		3	16	9	125		7	23	95	155	1	13
Totals	73	116	636	20	207	112	88	703	4	41	102	408	728	5	75
Percentage of Reactors				17.24	32.54				4.54	5.83				1.22	10.3
Average percentage				30.18					5.68					7.04	

Tested by Private Veterinarians	Initial					Additions					Other Tests				
	Tested			Reactors		Tested			Reactors		Tested			Reactors	
	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.	Lots	P. B.	Gr.	P. B.	Gr.
1924—July						1		8							
August						1		3							
September															
October						1		9		1					
November						1	3		1						
December						2		8							
1925—January						3		9		1					
February						1	3								
March															
April						5	2	10		1					
May						1		2							
June						1		4							
Totals						15	9	53	1	3					
Percentage of Reactors									11.11	5.06					
Average percentage									6.45						

CATTLE SLAUGHTERED—ACCREDITED

Reactors Slaughtered	Quarantined Last Fiscal Period	Quarantined This Fiscal Year	Quarantined Same Month as Slaughtered	Reactors not Slaughtered in Month Quarantined
1924				
July	238	...	129	75
August	...	143	171	120
September	...	162	143	165
October	...	291	291	288
November	...	115	212	227
December	...	194	103	50
1925				
January	...	188	186	100
February	...	289	197	128
March	...	87	237	169
April	...	62	241	86
May	...	149	227	56
June	...	46	348	92
Totals	238	1,726	2,485	1,556

TOTAL INDEMNITY PAID BY COUNTIES

From July 1, 1924, to June 30, 1925

Bergen	$4,946.08
Burlington	13,178.20
Camden	583.67
Cape May	737.53
Cumberland	2,577.22
Essex	4,611.96
Gloucester	785.83
Hunterdon	8,457.69
Mercer	5,369.73
Middlesex	2,069.30
Monmouth	499.34
Morris	3,861.76
Ocean	265.01
Passaic	10,637.93
Salem	4,579.60
Somerset	6,655.81
Sussex	3,250.65
Union	2,900.65
Warren	22,171.63
Total	$98,139.59

STATE, COUNTY AND MUNICIPAL HERDS

During the year we made the customary annual test of each of the herds owned by the State of New Jersey maintained at the various institutions, and issued re-accrediting certificates for same, all having passed the tests without reactors. Three of the county herds are

fully accredited and three in the process of accreditation. The herd owned by the City of Newark, located at Verona, is in the process of accreditation.

The following table will give the number of animals in each of the herds:

STATE INSTITUTION HERDS—FULLY ACCREDITED

	P.B.	GR.
N. J. Agricultural Experiment Station, New Brunswick	103	5
N. J. Manual Training and Industrial School, Bordentown	6	34
N. J. Reformatory, Rahway	1	37
N. J. State Prison, Leesburg	3	34
N. J. Sanatorium for Tuberculosis, Glen Gardner	..	87
N. J. State Colony for Feeble-Minded Males, New Lisbon	1	24
N. J. State Home for Boys, Jamesburg	2	77
N. J. State Hospital, Trenton Junction	14	170
N. J. State Hospital, Morris Plains	6	180
N. J. Reformatory for Boys, Annandale	..	14
N. J. State Institution for Feeble-Minded, Vineland	17	65
N. J. Village for Epileptics, Skillman	61	42
N. J. State Reformatory for Women, Clinton	1	39
Totals	215	808—1,023

Percentage of pure-bred animals in State Institution Herds 21.01%
Percentage of grade animals in State Institution Herds 78.99%

COUNTY HERDS—FULLY ACCREDITED

	P.B.	GR.
Cape May County Farm, Cape May Court House	2	8
Cumberland County Almshouse, Bridgeton	..	23
Morris County Almshouse, Morris Plains	4	9
Totals	6	40—46

Percentage of pure-bred animals in County Herds 13.04%
Percentage of grade animals in County Herds 86.96%

COUNTY HERDS—UNDER SUPERVISION

	P.B.	GR.
Essex County Hospital, Cedar Grove	119	15
Warren County Farm, Oxford	25	22
Burlington County Almshouse, New Lisbon	8	26
Totals	152	63—215

Percentage of pure-bred animals in County Herds under supervision 70.69%
Percentage of grade animals in County Herds under supervision .. 29.31%

CITY HERDS—UNDER SUPERVISION

	P.B.	GR.
Newark City Boys' Home, Verona	..	10
Total	..	10—10
Grand totals	373	921—1,294

Percentage of pure-bred animals in State, County and City Herds, 28.82%
Percentage of grade animals in State, County and City Herds 71.18%

CERTIFIED DAIRIES

Cooperating with the Medical Milk Commissions and the State Board of Health, whose jurisdiction covers the production of certified milk, tests were made of each of the certified dairies, and the following list will indicate the number fully accredited and those that are under supervision and regularly tested:

CERTIFIED DAIRIES—FULLY ACCREDITED

	P.B.	GR.
Fairfield Dairy Company, Montclair	15	424
Joseph W. Miller, Princeton	8	106
Shoemaker Dairies, Bridgeton	2	86
Totals	25	616—641

Percentage of pure-bred animals in Certified Dairies—Accredited	3.9%
Percentage of grade animals in Certified Dairies—Accredited	96.1%

CERTIFIED DAIRIES—UNDER SUPERVISION

	P.B.	GR.
Noe Farm, Madison	..	159
Purity Farm, Pennington	..	444
Raritan Valley Farms, Somerville	9	134
Sheffield Farm, Pompton Plains	..	285
Walker-Gordon Laboratories, Plainsboro	..	1,275
Walker-Gordon Laboratories, Juliustown	2	303
Woodbrook Farm, Metuchen	22	241
Willowgate Farm, Princeton	36	42
Totals	69	2,883—2,952

Percentage of pure-bred animals in Certified Dairies under supervision	2.33%
Percentage of grade animals in Certified Dairies under supervision,	97.67%
Grand totals	94 3,499—3,593

Percentage of pure-bred animals in Certified Dairies Accredited and Under Supervision	2.61%
Percentage of grade animals in Certified Dairies Accredited and Under Supervision	97.39%

IMPORT SHIPMENTS OF LIVESTOCK FOR IMMEDIATE SLAUGHTER ENTERING ON PERMIT

1924–1925

1924 *Month*	*Cattle*	*Sheep*	*Hogs*	*Goats*	*Cattle for Feeding*	*Sheep for Feeding*	*Sheep for Breeding*
July	12,268	14,858	53,923	.....	.....	179	.....
August	5,818	7,174	29,963	.....	.....	134	.....
September	3,754	4,617	28,811	.....	.....	.....	.....
October	29,855	4,623	89,718	.....	.....	.....	.....
November	8,286	1,911	65,450	.....	21	.....	55
December	7,420	728	34,046	.....	.....	.....	15

1925 Month	Cattle	Sheep	Hogs	Goats	Cattle for Feeding	Sheep for Feeding	Sheep for Breeding
January	7,107	661	48,632	.....	.....	.....	37
February	5,537	747	54,586	.....	.....	.....	10
March	9,867	1,299	31,197	.....	.....	.....	.....
April	9,066	1,462	22,918	.....	76	10	42
May	5,548	1,850	31,155	.....	.....	.....	.....
June	18,471	4,039	13,579	.....	.....	.....	.....
Totals	122,997	43,969	503,978	.....	97	323	159

NATIVE CATTLE

Tested by **Private** Veterinarians	Herd Tests				Other Tests				Tests for Export			
	Number Lots	Animals Tested	Number Reactors	Per cent Reactors	Number Lots	Animals Tested	Number Reactors	Per cent Reactors	Number Lots	Animals Tested	Number Reactors	Per cent Reactors
1924—July	19	41	2	4.87	12	41	9	21.95	4	10	.....	.....
August	14	103	4	3.88	7	15	2	13.33	2	4	.....	.....
September	19	157	12	7.64	18	59	4	6.77	1	2	.....	.....
October	29	279	26	9.31	9	19	.....	.....	4	7	.....	.....
November	20	198	23	11.11	3	12	2	16.66	3	3	.....	.....
December	51	715	58	8.11	3	4	.....	.....	3	7	.....	.....
1925—January	23	151	7	6.60	2	8	1	12.50	2	4	.....	.....
February	26	274	15	6.	6	17	.....	.....	.....	.....	.....	.....
March	47	668	36	5.39	3	6	.....	.....	4	28	3	10.71
April	50	739	43	5.8	2	4	.....	.....	5	14	.....	.....
May	61	492	36	7.31	5	21	3	14.28	2	3	1	33.
June	26	109	11	10.09	11	20	2	10.	3	3	.....	.....
Totals	385	3,926	273	6.95	81	226	23	10.17	33	85	4	4.7

Tested by Bureau Veterinarians (N. J.)	Herd Tests				Other Tests				Tests for Export			
	Number Lots	Animals Tested	Number Reactors	Per cent Reactors	Number Lots	Animals Tested	Number Reactors	Per cent Reactors	Number Lots	Animals Tested	Number Reactors	Per cent Reactors
1924—July	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
September	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
November	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
December	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1925—January	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
February	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
May	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June	.....	.....	.....	.....	1	1	1	100.	.....	.....	.....	.....
Totals	.....	.....	.....	.....	1	1	1	100.	.....	.....	.....	.....

IMPORT CATTLE

Tested Before Entering by Private Veterinarians	Number Lots	Animals Tested	Number Reactors	Percentage Reactors
1924—July	77	1,252	14	1.11
August	70	1,589	12	.75
September	78	1,787	34	1.9
October	149	3,229	104	3.22
November	90	1,869	37	1.97
December	62	1,255	44	3.50
1925—January	34	685	17	2.48
February	53	1,029	37	3.59
March	58	1,217	13	1.07
April	65	1,467	22	1.49
May	75	1,490	24	7.31
June	101	1,926	16	.83
Totals	912	18,795	374	1.98

Tested Before Entering by U. S. B. A. I. Veterinarians	Number Lots	Animals Tested	Number Reactors	Percentage Reactors
1924—July	8	135		
August	2	44	2	4.54
September	12	231		
October	15	222	1	.45
November	4	52	7	13.46
December	2	44		
1925—January	3	117		
February	3	26		
March	6	176		
April	8	147		
May	10	110		
June	6	102		
Totals	79	1,406	10	.71

IMPORT CATTLE

Tested After Entering by Private Veterinarians	Number Lots	Animals Tested	Number Reactors	Percentage Reactors
1924—July				
August				
September	1	20		
October	5	54	6	11.11
November	3	48	2	4.16
December	1	19		
1925—January				
February				
March				
April	1	29	4	13.79
May	1	10	7	7.
June	1	17	2	11.76
Totals	13	197	21	10.65

Tested After Entering by U. S. B. A. I. Veterinarians	Number Lots	Animals Tested	Number Reactors	Percentage Reactors
1924—July	2	17	4	23.52
August				
September				
October				
November				
December	1	27	4	14.81
1925—January				
February				
March	2	24	5	20.83
April				
May				
June				
Totals	5	68	13	19.11

MONTHLY COMPARISON OF IMPORT ANIMALS RECEIVED FROM THE FOLLOWING STATES FOR DAIRY AND BREEDING PURPOSES

	Sept.	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*
New York	489	919	587	430	274	384	341	348	200	112
Pennsylvania	382	701	412	178	102	199	192	273	328	532
Michigan	499	581	319	392	226	345	467	406	569	676
Buffalo Yards	167	110	68	44	38	19	....	137	....	66
Lancaster Yards	3	36	1	29	....	....	....	....	....	....
Virginia	122	120	86	21	....	....	....	25	....	72
Cincinnati, O.	41	....	....	....	....	....	....	....	75	....
Maryland	29	34	1	....	....	....	....	2	112	33
Massachusetts	22	1	....	....	3	5	....	....	7	5

	Sept.	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*
Wisconsin	44	129	201	35	....	....	70	175	134	297
Ohio	134	250	77	....	....	....	42	33	75	113
Vermont	63	192	96	63	63	45	58	106	135	26
New Hampshire	....	40	....	....	....	....	....	....	....	....
Tennessee	....	31	....	....	....	....	....	35	....	34
Kentucky	....	56	....	....	....	....	....	....	....	....
Delaware	....	4	1	....	....	4	1	2	....	4
North Carolina	....	26	27	....	....	....	....	....	25	23
South Carolina	....	....	....	....	....	....	....	....	24	....
Iowa	....	....	6	....	....	....	....	....	....	....
Connecticut	....	....	29	46	....	....	....	....	....	....
Athenia Quarantine Station	....	....	....	....	76	....	59	46	6	8
Louisiana	....	....	....	....	....	....	....	1	....	....
Illinois	....	....	....	....	....	....	....	....	6	....
	1,995	3,230	1,911	1,238	782	1,001	1,230	1,589	1,696	2,001

CATTLE SLAUGHTERED—NOT INCLUDING ACCREDITED

Reactors Slaughtered	*Quarantined Last Fiscal Year*	*Quarantined This Fiscal Year*	*Quarantined Same Month as Slaughtered*	*Reactors Not Slaughtered in Month Quarantined*
1924				
July	..	14	14	1
August	5	5	1	5
September	1	6	7	9
October	..	14	10	18
November	10	45	21	4
December	..	9	7	51
1925				
January	..	37	2	6
February	..	17	3	11
March	..	17	32	12
April	..	10	25	18
May	..	28	31	9
June	..	13	16	7
Totals	16	215	169	151

EXTENSION WORK

Fewer requests than in previous years have been made of the Bureau for representatives to attend various local meetings throughout the State during this fiscal year. However, where requests were made for either speakers or the showing of the Department films, representatives were detailed to comply with such requests.

REPORT OF THE BUREAU OF MARKETS

ALEXIS L. CLARK, *Chief*

General Policy.—To promote the marketing of New Jersey farm products as directly as practicable through nearby markets.

INTRODUCTION

The program of the Bureau of Markets has been built up gradually during the nine years of the Bureau's existence. It is the result of study, experimentation and demonstration. No important change has been made from the beginning, although some projects have been altered and some new lines of work added. It is based on well-known principles and established facts which may be stated briefly as follows:

1. While no other agricultural section in the world enjoys the proximity to large centers of high-class, consuming population that New Jersey does, our producers gain little benefit from their location because of their independent and unsystematic marketing practices. Our natural advantages prove to be our greatest handicaps, and we defeat our own best interests by thrusting huge quantities of food commodities into our costly distributive channels with no relation to consumer demand. High retail prices and low production values must necessarily continue under such a regime.

2. "An average selling price not far below the cost of production is a stimulative price."* This has always been a discouraging factor in agriculture. A relatively small proportion of efficient producers will make a profit when the average returns show a small loss, and with large numbers of individual producers acting independently the result is that all try to equal the success of the few. This emphasizes the age-old problem of making agriculture profitable and the need for definite and positive marketing reforms which will adjust production to market needs, an adjustment which will cover quantity as well as kind and quality.

3. Our consumers continually increase their demands for service, and our distributing agencies consequently are forced to increase their service charges.

4. Production costs in New Jersey have shown a rising trend for years past, due to industrial labor competition, land values changing

*From an address of Dr. E. G. Nourse at the Sixth Annual Conference on Co-operation at Trenton, February 10 and 11, 1925.

from a level of agricultural production to one of real estate, and also to increased freight rates and costs of farm supplies purchased.

5. While present freight rates are considered high by our State farmers, they do act as a protective tariff in favor of our home-grown products on our nearby markets.

6. Modern merchandizing practices prove the value of cultivating a given territory intensively and of supplying the trade with uniform and reliable commodities.

PROGRAM

Based on the foregoing points, our marketing program aims to secure results in three ways:

1. To reduce costs and wastes in distribution.

2. To secure a higher net price for the products of New Jersey farmers.

3. To insure an adequate supply of certain food products at reasonable prices to consumers in nearby markets.

Our projects of work are as follows:

1. The adoption and use of legal standard grades of quality and standard packages for all New Jersey farm products going to market.

2. A continual readjustment of highway, rail and water transportation facilities to meet the needs as experience shows necessary.

3. The establishment of local wholesale markets at strategic points and the management of them in a systematic manner, so that the greatest possible correlation and adjustment between the various factors of production, distribution and consumption may be secured.

4. The adoption of a Federal or State registration or listing scheme for wholesale produce merchants on a voluntary basis, through which a greater degree of confidence may be insured between our producers and our wholesale distributors.

5. The establishment of city retail market places where farmers may sell direct to consumers, and the management of them by competent persons.

6. The adoption of the N. J. Standard Milk Ordinance by all municipalities, under which only distinct and uniform grades of milk may be marketed.

7. The acceptance by all of the large cities in the State of our city marketing director plan, through which we shall be able to render the most direct and definite service to producers, distributors and consumers in meeting many of our modern city marketing problems.

This project meets a particularly important need in studying retail distribution costs and in aiding retail food merchants to introduce economical measures without losing the confidence of their patrons.

8. The acceptance by many farmers of our standard roadside market rules and the development thereby of a larger and more stable business in selling farm produce on the farm to the motoring public.

9. The promotion of cooperative selling associations wherever they are wanted and where there seems to be genuine need for them.

10. The building up of a State-wide poultry registration plan as part of a national scheme to insure authentic recognition for breeders of individual birds and flocks of high quality and performance.

11. A research project which will seek out new avenues for marketing progress and will continually check up the strong and weak points of all our lines of activity.

12. The continuing overspreading of the State with our marketing informational service by mail, telephone, telegraph, newspapers and radio.

SOME PROGRESS MADE

In a work of this kind it is difficult to analyze or measure the actual accomplishments. One may only guess what progress would or would not have been made were there no Bureau of Markets in existence. Certainly the most enthusiastic believers in the Bureau would hardly dare to claim all the innovations and profitable changes in market practices as the direct results of the Bureau's work. Probably the best way to review the activities of the Bureau is to point out the most important developments and allow everyone to judge for himself how much the Bureau has been responsible for such developments.

STANDARDIZING FARM PRODUCTS FOR MARKET

The standardization of products is an old idea and exemplified in commercial practice many years ago. To-day the butter industry in the United States represents the best agricultural example. In New Jersey, where any farmer can sell almost any product he raises at some price, and where many avenues of selling are available, uniform grades seem to have made slow headway. Probably peaches, apples and eggs are more uniformly graded to-day than most other products. New Jersey's reputation for sweet potatoes has doubtless been made partly on the uniformity of the pack. Legal standard grades have been adopted either completely or tentatively for all of these products

and the trend of practice is certainly toward the use of these standards.

Several hundred carloads of peaches and early apples are inspected each year and certified to by State-Federal food products inspectors upon the request of growers and shippers. Thousands of growers know more or less about the standard grade requirements and make some effort toward meeting them when preparing their products for market.

Standard grades have also been discussed and partially or entirely established for hay, milk, tomatoes, white potatoes, onions, lettuce and asparagus. Nineteen carloads of hay were given shipping point inspection during the past year. Most of the canning factory owners, who buy large quantities of tomatoes, have been made familiar with the tomato grades, and shipments of this product show considerable improvement.

Surveys conducted by the Bureau in 1922 and 1924, through personal conference with forty carlot receivers in cities from Boston to Chicago and St. Louis, showed that New Jersey potatoes were unpopular. The two principal reasons were poor quality and non-uniformity. The Giant is a low-quality variety, and many Cobblers and Green Mountains have been sold in poor condition. During the last year the Potato Improvement Committee made considerable headway in getting the competing distributors at shipping points to work together in grading their shipments.

Four years ago a cooperative potato selling association was started which promised to solve one of the most difficult problems, that of getting the growers themselves to realize the need of uniform grading. This association was formed in the best possible manner, but after functioning for three years voted to disband. We hope that the growers and dealers will appreciate the necessity of uniform grading after this season to as great an extent as they have learned to substitute good quality varieties in place of Giants. In 1922, 75 per cent of the acreage was in Giants. In 1925 this was reduced to about 15 per cent.

Up to the present time we have found it possible to secure conformity of practical grades in our State with grades recommended by the Federal Department. Our recent studies on asparagus, lettuce and tomatoes have been in conjunction with studies made by the Federal Department, and we maintain at all times very close relations with the heads of the several projects in that Department.

TRANSPORTATION METHODS CHANGE

Nine years ago motor trucks were being used by only a few large growers. To-day probably over one-half of our farm produce is sent to market on motor trucks, and the remainder is carried to the railroad stations by trucks. Only in the hilly sections of our northern counties and on small, poor farms elsewhere can any market wagons be found at the present time. Through the activities of our transportation specialist the Bureau has been able to get almost one hundred per cent service from the railroad companies.

Innumerable matters of small general interest but of acute local importance are handled every week under our transportation project. Terminal facilities in Jersey City and Newark have claimed considerable of our time and interest. The Port of New York Authority and the State Board of Commerce and Navigation are always ready to accept suggestions from us. At one time we even had to go so far as to secure the help of the United States Secret Service in ridding New Jersey motor truck operators of the persecution of a drivers' and loaders' labor union in New York City.

For more than a year we have studied the problem of truck hauling vs. train hauling. When the distance exceeds forty or fifty miles the risk from several factors becomes an important matter. Truck operators vary greatly in their dependability as to schedule and also as to insurance and liability on commodities handled. The possibilities in State regulation of commercial motor trucks on a basis comparable with other public carriers are now being studied. As we see it, one hundred per cent fast freight service cannot be continued with the growing competition of irresponsible motor truck operation. Store door delivery systems as proposed by several railroads have had our consideration, as well as cartage problems, strikes and other matters met with in this connection.

Practically nothing has been done in regard to water transportation. Several years ago we tried to have South Jersey produce shippers take advantage of the cheap rates from Philadelphia to Trenton, but met with no success.

WHOLESALE MARKETS

On our trips about the country we confer with leaders in the national wholesale produce trade. Such contacts also give us first-hand information on the reputation and likes and dislikes for Jersey produce in distant markets. For instance, in 1922 we were able to

say authoritatively that nine potato buyers out of ten did not want to handle the Giant variety. Our statement was based upon the answers to a questionnaire signed by some forty carlot receivers whom we had interviewed.

Wholesale dealers as individuals, and their organizations in New York, Newark and Philadelphia, are considered our friends because we have in common a desire to reduce marketing wastes and costs. Our study on wholesaling costs in Philadelphia was one of the first pieces of work of this kind ever carried through. Its principal lesson, showing that one-sixth of the produce received did not pay its own marketing costs and that such low-priced stuff was a liability to all concerned, we believe, will continue to have a beneficial influence on farm produce shippers for years to come. This study covered in detail one and one-half million baskets of produce.

Wholesale market places are found in a number of localities, and they vary in character from the Swedesboro carlot shippers' market to the Newark farmers' plaza. For eight years we gave such help as we could to those responsible for some of these markets, but were never satisfied with the management and conduct of them. Usually there is a great waste in the farmer's time and a wide variation in level of prices.

Last year the City of Trenton asked us to recommend a properly qualified manager for its market system and to give some supervision. To meet this request we worked out the city marketing director plan. Camden, Burlington and Trenton now have city-owned public wholesale markets managed under this plan, and Atlantic City, Hammonton and Newark are interested in the subject. Under the rules which we recommend for such markets the hours are limited so as to insure as far as possible a short, brisk period. Outdoor stalls are rented by the single day or month. Market reports are posted, and standard grading and other important matters are brought to the attention of both sellers and buyers.

The Burlington market is the latest one for which we assumed some measure of responsibility. Seven farmers were persuaded, after much argument by the county agent and our own men, to try it out on the opening day, July 6. On the morning of August 5 there were eighty-one loads, many of which were large motor truck loads, and they sold out well to buyers from many points.

The City of Hammonton has recently appointed a committee to cooperate with us in improving the wholesale market in that city.

Wholesale produce markets operated, if possible, under our city marketing director plan should be in operation at strategic points about the State, and doubtless one or two can be added next year. Approaches are being offered through luncheon clubs, women's clubs and chambers of commerce.

STANDARDIZING TRADE PRACTICES

In the world-wide effort to stabilize commerce, and the distribution of foodstuffs in particular, it was long ago recognized that uniform terms for descriptive and bargaining purposes were necessary adjuncts to a standard grading system. One of the first efforts this Bureau made was the arrangement of a conference in New York, where ten representatives of the produce trade handling Jersey stuff met six representative New Jersey farmers, together with the Secretary of the State Board of Agriculture and the Chief of the Bureau of Markets. As a result of this conference a "Memorandum of Commission Service" was written up by this Bureau and signed by six merchants. Its object was to promote confidence between the shipper and the commission merchant by having this Bureau act as an arbiter in questions of dispute and dissatisfaction. We have never ceased pressing this movement, but we have realized that it was primarily a national work. Several conferences have been held with officers of the produce trade, city and national organizations, and public officials. The leaders in the trade are now pretty well united in support of a plan in which the Federal Secretary of Agriculture is named as the referee. The plan includes very complete details for defining and describing scores of trading terms and practices. The produce trade now recognizes that it must have some such voluntary system as this or enforced regulation, which at best has always given questionable results, will be forced upon them by law.

During the past two years representatives of this Bureau have addressed ten Rotary and Kiwanis clubs and several commercial organizations on the general subject of "Ethics in Trade."

As President of the National Association of Marketing Officials one year and as chairman of a special committee on standard trade ethics, the Chief of the New Jersey Bureau has probably had some influence in bringing about a favorable attitude and a realization of need for definite action along this line. All of the national produce trade organizations will be asked to accept and support a Federal system of voluntary registration this summer.

FARMERS' RETAIL MARKETS

The Bureau assisted in the establishment of farmers' retail markets in several cities before the war, and during the war as many as twenty cities were operating them. In most cases they had no direct supervision, and only a few survived after the interest of war-time service waned. As with wholesale market places our experience convinced us that competent management was necessary.

In 1920 the City of Trenton gave over to us the direction of the wholesale and retail markets which had been established according to our suggestions. This year one wholesale market, accommodating twenty loads a night, and three retail markets with over one hundred loads a night, are in operation. A retail market has just been opened in Camden along the same lines as those in Trenton. Farmers' retail markets will find an increasing opportunity, and we expect to see more of them handled as the Trenton and Camden markets are.

When produce is cheap the ordinary marketing costs represent a relatively large proportion of the retail price. All of the services which must be charged up against the costs of marketing are paid for on a much higher level than the average farm producer can earn, and many New Jersey farmers can add considerably to their net income by contributing more of their own services in marketing and thereby earning these higher rates of pay.

All of the wholesale and retail markets which we have promoted are maintained on a self-sustaining basis. The City of Trenton in 1924 took in $4,150 from farmer fees of 35 cents per market stand each night. The city paid out $2,100 in salaries and $1,000 in lights and improvements, and turned over to the city treasury around $1,000. We have the promise of those in charge that this profit will be used to build a cover over the market walks.

STANDARDIZING THE FLUID MILK TRADE

In 1919 this Bureau called a conference of State and municipal health officers, dairy farm owners and women's club officers. This conference requested the Bureau of Markets to establish standard grades for milk and the Department of Health to write a model municipal milk ordinance. To-day twenty-one municipalities in New Jersey have adopted this model milk ordinance, which incorporates our three standard classes of milk. Mr. Bennetch, who is responsible for the success of this project, has spoken on the subject at several

national conventions, and we believe that it is an original work which will be recognized as a real contribution to the milk industry.

The partial results secured by the establishment of standard milk grades are being followed up. Every city which has adopted these grades should be thoroughly surveyed, and the milk sellers informed as to how they may properly carry out the details of standardization in their own business. In the selling of milk, just as in the selling of all other standardized products, much will have to be done by informational as well as by regulatory measures.

THE CITY MARKETING DIRECTOR PLAN

In the work with public markets we found that retail merchants, in particular, regarded our efforts in an antagonistic manner. When we drew up an agreement with the City of Trenton so as to give the best aid possible to its markets, we went back to our marketing law, Chapter 83, Laws of 1921, for authority to cooperate with cities in all marketing problems. Our city marketing director plan, as now in effect with Camden, Burlington and Trenton, varies a little to meet different conditions. As our Camden agreement is the latest, we are quoting the activities as proposed therein:

(a) Development and management of a wholesale produce market upon the site leased from the Philadelphia and Reading Railroad.

(b) Development and management of such other wholesale and retail produce markets as the city may from time to time designate.

(c) Carry on an informational service for producers, distributors and consumers, covering supplies of produce available or expected, market quotations, best uses for various kinds and varieties, and other useful facts.

(d) Study the economics of food marketing in the City of Camden and aid the distributors in developing the most efficient methods of distribution.

(e) Attempt to correlate the production, preparation and receipts of farm products to the requirements of Camden markets.

We consider this one of our most important activities. It does two things: first, it places the city in a position of responsibility for economical food distribution; second, it places a trained man in charge of the work through whom we may influence many marketing activities.

PROMOTING ROADSIDE MARKETING

Every year we have made several trips about the State taking pictures and studying the development of roadside markets. Last year we covered and secured reports from one hundred and fifty markets from Sussex County to Cape May. We decided that our best opportunities in this line were being lost to us because of non-farmer operators and foreign produce sold as native. Last winter we made a report of our findings before the State Horticultural Society, and recommended that the Society appoint a committee to work with us in preparing a plan which should raise the standard of roadside markets and insure a wider opportunity for this kind of direct selling. The New Jersey standard roadside market plan was suggested and after two conferences adopted. Up to the present time twelve of the largest farmer-owned roadside markets in the State have been certified by us as N. J. Standard Farmers' Roadside Markets. They display signs carrying that term. The principal rules are:

(a) Seventy-five per cent of produce sold must be grown by the owner.

(b) Not over ten per cent may be foreign produce and it must all be labeled to show its origin.

(c) The face or top of each package must be fairly representative of the entire contents.

COOPERATIVE SELLING

The years of agricultural depression following the war brought a great interest and demand for cooperative action. This Bureau has taken most of the responsibility for incorporating seventy-five farmers' cooperative selling and buying associations. Of these only one failed in such a way as to entail financial loss to its members. This organization was promulgated by a lawyer who was entirely unfamiliar with the subject. Later the directors, against our strong advice, gave their personal notes as security for financing the organization.

Of the many things learned in the practice of cooperation, some of the more important factors may be mentioned as follows:

1. While cooperative action may be helped by self-imposed rules and long-term contracts, it must be supported in spirit and will by the members themselves.

2. Cooperation can only succeed as it performs some economic services more efficiently than other competing agencies, either individual or corporate.

3. Cooperative marketing should influence production practices so as to adjust production more definitely to marketing demands.

4. In New Jersey, with nearby markets all about us, cooperative marketing involves some problems which are not met with in agricultural sections further removed from their markets.

5. Cooperative principles applied to marketing have afforded marked progress in standardization and systematic distribution.

The opportunities in cooperation for our farmers are probably not so great as in States further removed from their markets. Such commodities as are shipped in quantities to distant markets hold out the best promises for results, and we shall endeavor to be prepared to give wise counsel whenever a group of farmers desires to join for cooperative purposes. We hope to continue the annual conferences on this subject, and in this way and others to promote a sound conception of the opportunities and limitations of cooperation and to encourage the development of cooperative practices along sound economic lines.

REGISTRATION OF POULTRY

Poultry registration is purely a standardization work. Eight years ago the Bureau started to encourage the marketing of dressed poultry more advantageously. The Black Giant breed was popular for capons and roasting chickens, but it was not a uniform breed and varied greatly in size, type and color. The first birds of this breed ever shown were exhibited in the Armory in 1917. In 1923 we worked out standard requirements for this breed with the Mercer County agricultural agent, and certified about 4,000 birds. It was a marked success from the beginning. The matter was taken up in other States and has been urged by our Bureau as a national scheme to create confidence in the poultry breeding industry. Last year we certified nearly 30,000 individual fowls of ten different breeds.

Our plans now permit breeders to enter successive stages of official recognition up to the registration of individual birds of proven high performance. Members of the Bureau staff have served on national committees in the interest of this activity. Upon two occasions the poultrymen of the State were invited to confer with us on this subject, and the largest and most progressive breeders and hatchery operators were present at the conferences.

RESEARCH

Research, strictly as such, in marketing is a comparatively new field. The first Bureau specialist in research served nearly three years and proved to be of immeasurable help. The first work was that of finding costs of handling New Jersey produce in the Philadelphia wholesale markets. The second work was showing margins on twenty home-grown commodities handled by twenty retail grocers in Trenton. This work has been carried on for two years. In addition we have marginal figures on the same commodities from several storekeepers in other cities. The New Jersey system of forecasting prices on white and sweet potatoes is an outstanding piece of original work. A number of minor facts obtained have had to do with costs of produce packages, some of the costs in marketing potatoes, forecasting prices on peaches, grocery store operating costs, etc. This is a work of fundamental importance to the Bureau and to the citizens of the State.

REPORTING MARKET INFORMATION

In cooperation with the Federal Department and the State Departments of Pennsylvania and New York and the cities in which are maintained city marketing directors, we secure market prices and other information. These facts are reported to our office each morning by 9.30, together with seasonal information from other markets. We, in turn, distribute the information throughout the State by mail, telephone, telegraph and radio. Newspapers carrying these reports cover every section of the State and have a circulation of over a quarter of a million. We have every reason to believe that our market reporting project is second to none in the country. Besides such daily reports, we get out several special weekly reports on separate commodities and for special groups of people. As a part of this general project we send out one or more newspaper stories each week which carry to the public important facts about marketing in story form.

The informational service to women's organizations should be developed to a much larger degree. We consider that this field offers exceptional advantages in bringing influence to bear upon consumer buying practices.

A LOOK AHEAD

The Bureau is satisfied that the trend in New Jersey farm practices in the future will be toward specialized production under in-

tensive methods to meet certain very definite market demands. In general, the most urgent demands will be found in our great and small New Jersey and other nearby markets. There will be, for some time to come, some exceptions. The Hammonton berry section may continue to ship to outside districts, as will the growers of peaches and early apples of Burlington County and the other southern counties. The cranberry industry has a permanent, wide marketing outlet. White potato growers may continue to find profitable outlets further away than Philadelphia and New York. Sweet potatoes from Gloucester County may continue to go to Pittsburgh and Chicago. Our milk producers and poultry raisers have already found that nearby markets were their only logical outlets. Producers of all farm crops will more and more be brought to face the situation that our home markets are protected for us by transportation costs and time, while distant markets frequently will have the advantage of lower production costs in their own nearby farming areas.

This simplifies and at the same time confuses the situation. We know what we ought to do and we may say we know how our nearby markets should react, but the difficulty of adjusting our production to this limited market district is one the like of which has never in the history of the world been adequately solved.

It is the Bureau's aim to cause all agricultural and economic interests to see the need of recognizing market demands first and building their State, community and individual farm production programs upon it. In the intense desire to secure the acme of scientific production which Federal and State authorities have promoted, we now know that too little appreciation has been given to actual selling price probabilities. The fundamental reason for all production is to supply a need. "The greater the need, the higher the price," is an old adage and entirely accepted. When our farm producers can see clearly how they may estimate market needs a season in advance they will be quick to concentrate on filling that need.

In conclusion may we emphasize again that marketing must be considered as the final goal of all production activities. Little or no systematic effort was directed toward improved marketing for fifty years after the beginnings were made in studying farm production. Much of the service now rendered is on a cooperative financial basis or is completely self-sustaining. New Jersey farmers paid out nearly $5,000 for marketing services performed by us last year, and milk distributors paid some $2,000 in license fees. The services secured from the trained men on various markets cost the State of New Jersey

only a little over $2,000, while other State and Federal agencies contributed over $15,000 toward the support of these same men.

The goal of adjustment between production and consumption comes into sight as we visualize standard products, standard trade practices, trained marketing directors in our large cities, and a continual flow of market information back and forth from consumer to producer, and a knowledge of market demands sufficiently comprehensive for the producer to build his entire production program upon it. Just as the county agricultural agent has been the leader on the frontier of production, so are our marketing specialists pioneering the way at the other side, and we now know that efficient production depends upon meeting market demands.

No field of service offers equal opportunity to-day to the field of marketing. Much preliminary work has been done, and we believe much greater accomplishments in the interests of all are before us. The Bureau of Markets of the New Jersey State Department of Agriculture stands ready confidently and eagerly to work out from day to day and from year to year new and better ways of reflecting the wants of our consuming population to our producers and of directing food products as economically and efficiently as possible from the one to the other.

REPORT OF THE FRELINGHUYSEN LOAN FUND

GRACE M. ZIEGLER, *Assistant Manager*

The past year has been an active one in the work of the Frelinghuysen Fund. While there was a slight reduction in the number of loans made for calves, the loans for the purchase of pigs were more than double those for 1924, and there was a slight increase in the amount of money loaned for the purchase of poultry. There were very few loans for pigs in 1924 due to the low price of pork, and the greater activity in the swine division of the club this year was due to a more promising outlook in this respect. The loans made in the different counties during the year were as follows:

County	*Calves*	*Pigs*	*Poultry*
Atlantic	..	..	..
Bergen	..	..	..
Burlington	5	..	..
Camden	..	..	..
Cape May	..	..	..
Cumberland	6	..	1
Essex	..	..	..
Gloucester	..	..	.
Hudson	..	..	..
Hunterdon	7	..	..
Mercer	5	6	2
Middlesex	5	..	..
Monmouth	7	..	10
Morris	9	..	2
Ocean	7	..	..
Passaic	..	..	..
Salem	13	20	2
Somerset	2	..	..
Sussex	6	..	..
Union	..	..	..
Warren	9	..	..
Totals	81	26	17

The following table shows the numbers and amounts of loans made for the purchase of each kind of livestock since the fund was established in 1921:

Fiscal Year	*Calf Loans*		*Pig Loans*		*Poultry Loans*		*Total Loans*	
	No.	*Amount*	*No.*	*Amount*	*No.*	*Amount*	*No.*	*Amount*
1921	30	$2,815					30	$2,815.00
1922	92	7,985	16	$1,074.98	16	$824.25	124	9,884.23
1923	81	6,365	21	1,257.25	13	636.25	115	8,268.50
1924	96	8,670	10	409.50	14	932.00	120	10,011.50
1925	81	7,065	26	1,320.00	17	1,183.50	124	9,568.50
	380	32,900	73	4,071.73	60	3,576.00	513	40,547.73

DEATHS OF ANIMALS

Charges totaling $400 were made against the Mutual Calf Emergency Fund during the year, six calves having died from various causes. Three losses occurred in the Pig Club, amounting to $156.80. The total deficit in the two accounts is now $1,014.21. It is hoped that the losses on account of death of animals will not increase sufficiently to make necessary an assessment, as provided in the agreement with club members, but there can be no knowledge of the rate at which losses may occur, and the interest earned on notes and money in bank may easily become insufficient to take care of necessary expenses, premiums awarded at the Interstate Fair and an increasing number of losses on account of death of insured animals.

EXHIBITS

Great interest was shown by club members in the exhibits at the Trenton Interstate Fair. More than 130 entries were made in competition for Frelinghuysen Fund prizes, over ninety of them being in the Calf Club classes. The special sweepstakes award of $200 contributed by President Frelinghuysen, of the State Board of Agriculture, created a keener rivalry than in previous years. The total awards made in the Frelinghuysen classes amounted to $798. It is felt that this is money well spent because of the knowledge that may be secured by club members regarding true breed types and in the fostering of a determination to secure better animals. Those who are not successful in winning cash prizes often are the ones who gain most through learning why their animals did not prove to be winners.

SECURING GOOD ANIMALS

In a number of cases the animals purchased by members of the Junior Breeders' Association have not been good producers, and some disappointment has resulted. The breeders of the State realize that this endeavor on the part of the State Board of Agriculture will mean much to the industry in which they are engaged, and upon invitation of State Club Leader Hulbert, a group of representative breeders and club agents came together in conference on March 16 in Secretary Agee's office to discuss means by which the hazard of securing poor animals may be lessened. There was general discussion of the difficulties of determining the value of a calf confronting even experienced buyers, and a committee composed of one representative

of each breed of dairy cattle was appointed to give further consideration to means of assisting the boys and girls to reduce the risk taken by them.

Professor Hulbert and his staff of club agents have worked untiringly in promoting the interests of these young people and have made possible whatever success has been attained in the administration of this fund.

REPORT OF THE BUREAU OF STATISTICS AND INSPECTION

HARRY B. WEISS, *Chief*

Statistical and Related Work

CROP ESTIMATING

In the past year the scope and accuracy of the crop reporting service have been considerably increased. The cooperative arrangement with the Federal Department of Agriculture has continued with full satisfaction. Complete reports of acreage, yield, production and farm value were made on thirty-six crops, and timely partial reports were made on approximately ten crops, a total of forty-six crops in all. Reports on the numbers and classification of livestock on farms were also made.

With the aim of creating greater stability in the acreages of crops, and to aid the farmers of the State in adjusting their plans for planting, a very comprehensive report on "Growers' Intentions to Plant," based on the prospective acreage of the crops on a large sample of individual farms, was made for approximately twenty-one crops. An analysis of the situation respecting each crop from a national and local aspect was prepared in connection with the report and was favorably received by the growers.

The truck crop statistical service is now quite thoroughly organized, and every effort has been made to produce as complete and accurate information relating to these crops as possible. A list of about 7,000 truck-crop growers in the State has been secured and is used for individual farm acreage surveys two or three times a year.

In this connection the Bureau desires to express its appreciation of the splendid cooperation of the 600 or more farmers and other well-qualified persons who have acted in the capacity of monthly crop correspondents. The accuracy of the reports on crops, etc., is due in no small measure to the good judgment and cooperation of these men.

The Monthly Crop Report itself has accordingly been increased in comprehensiveness and value with the widening of the scope of the crop statistical service. It is believed that the well-informed farmer is the better able to plan the organization of his farming enterprises and to resist the influences of unfavorable economic conditions. To this end every effort has been made not only to report as completely

as possible crop production in New Jersey and other sections, but to review the general economic situation as it relates to agricultural conditions.

THE FRUIT AND VEGETABLE CANNING INDUSTRY

This industry, the products of which exceed $40,000,000 in value annually, constitutes an important market for the vegetable crops within the State. There has been a demand for information on the size of the pack of all fruits and vegetables by New Jersey canners, along with statistics relating to prices, etc., and this demand we have attempted to gratify by an annual statistical report of the production of the industry, based upon a complete canvass of the operations of every establishment. In the fall of 1924 a circular (No. 80) was prepared, summarizing the operations of the industry in 1923 and previous years, and this was followed by a report of the 1924 pack in the January, 1925, Crop Report.

MONMOUTH COUNTY TRANSPORTATION SURVEY

A survey was conducted by the Bureau in connection with the long-time program for agriculture in New Jersey, upon which the efforts of several agencies are being devoted. Information regarding the extent of shipments by truck and rail, the extent of local consumption of produce, the comparative transportation costs by rail and by truck, the quality of service rendered by the truck transportation companies and the railroads, and other information of general value and interest, was secured.

PEA DISEASE SURVEY

A survey was conducted in cooperation with the Department of Plant Pathology of the New Jersey Agricultural Experiment Station to determine the extent of the injury caused by pea root rot and other diseases which have eliminated green peas from certain areas in the State as a commercial crop and which threaten to become a still more serious menace.

PASTURE SURVEY

A survey, in cooperation with the Department of Agronomy of the New Jersey Agricultural Experiment Station, is being conducted

with the object of determining facts relating to pasture management and the relationship of carrying capacity to the vegetation and geologic soil type of the pastures. A cost study is contemplated at a later date.

CHART SERVICE

The Bureau from time to time has contributed charts especially designed for use at various agricultural conventions and meetings.

LONG-TIME PROGRAM FOR NEW JERSEY AGRICULTURE

This Bureau has been cooperating with the various agricultural agencies, by investigations and analyses of agricultural statistics, with the object in view of determining the most efficient enterprises for the farmers of the State from a long-time aspect.

MISCELLANEOUS

Research work has been done to determine factors influencing the prices of cranberries, which will be reported in a circular.

Inspection Service

HARRY B. WEISS, *Chief*
THOMAS J. HEADLEE, Ph. D., *State Entomologist*
WILLIAM H. MARTIN, Ph. D., *State Plant Pathologist*

The following reports deal with activities pursued during the fiscal year ending June 30, 1925.

FOREIGN STOCK INSPECTION

Fall, 1924

Origin	*Number of Cases*	*Roses*	*Seeds Tree and Palm*
Germany	1	1	..
Holland	11	11	..
England	28	28	..
Australia	4	..	4
Totals	44	40	4

Spring, 1925

Origin	*Number of Cases*	*Roses*	*Seeds*	*Fruit*	*Orchids*	*Lily-of-the-Valley*
England	61	8	..	..	53	..
France	7	3	1	3	..	..
Ireland	11	5	6	..	..	..
Holland	10	4	6	..	..	..
Germany	3	..	2	..	..	1
Canada	1	..	..	1	..	..
Totals	93	20	15	4	53	1

DOMESTIC STOCK INSPECTIONS

Fruit Stock—Fall, 1924

Origin	*Cases*	*Cars*	*Shipments infected with crown gall*	*Trees destroyed*
Connecticut	4	..	4	52
Delaware	4	..	2	38
New York	5	..	1	45
Ohio	4	..	..	..
Tennessee	1	..	1	3
Totals	18	..	8	138

Ornamental Stock—Fall, 1924

Origin	*Cases*	*Cars*
New York	20	..
Pennsylvania	3	..
Alabama	2	..
California	1	12
Connecticut	1	..
Maryland	1	..
Massachusetts	1	..
Michigan	3	..
Ohio	45	..
Oregon	8	..
Totals	85	12

Fruit Stock—Spring, 1925

Origin	*Cases*	*Bales*	*Cars*	*Shipments Infected*	*Trees Destroyed*
New York	10	9	..	8	316
Maryland	..	1	..	1	21
Pennsylvania	11	4	..	..	...
Missouri	11	..	..	..	...
New Jersey	6	..	..	2	163
Delaware	..	2	1	1	99
Connecticut	..	1	..	1	15
Totals	38	17	1	13	614

Ornamental Stock—Spring, 1925

Origin	*Cases*	*Cars*
California	15	.5
Massachusetts	1	..
New York	4	..
Ohio	8	..
Virginia	3	..
Maryland	1	..
Connecticut	2	..
Totals	34	.5

NURSERY INSPECTION

Two hundred and sixty-seven nurseries and dealers' establishments were inspected and certificates issued, as follows:

General	181
Berry	17
Rose	12
Greenhouse	9
Peach	8
Dahlia	5
Privet	3
Fern	2
Grape	1
Lilac	1
Orchid	1
Hydrangea	1
Dealers	*26*
	267

SPECIAL CERTIFICATES

Fifty special certificates were issued following inspection to permit the movement of small amounts of stock. These were issued to people not regularly in the nursery business.

Nine shipments were certified as apparently free from soil and Japanese beetle larvæ to comply with certain State regulations.

Eight certificates of fumigation were issued in compliance with the Canadian regulations.

SPECIAL INSPECTIONS

Fifty-five inspections were made following letters of inquiry from residents of the State. The nature of the plant diseases and pests involved in these cases demanded a personal visit.

RASPBERRY INSPECTIONS

Twelve requests were received for the inspection of raspberry patches for degeneration diseases. A total of 254.5 acres was

inspected. Three small patches, including about 1 acre, were rejected. The other 9, with a total of 253.5 acres, were certified as free from disease. These were almost entirely of the Ranere or St. Regis variety.

WHITE PINE BLISTER RUST

Infections Found Since 1916

Locality	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925†
Rutherford	15	9	0	0	0	0	0	0	0	0
Little Silver	*1	*1	0	0	0	0	0	0	0	0
Clementon	0	0	2	0	0	0	0	0	0	0
Eatontown	3	0	0	0	0	0	0	0	0	0
Red Bank	*1	*1	*4	*1	0	0	0	0	0	0
Millburn	1	0	0	0	0	0	0	0	0	0
Morristown	48	6	3	0	0	0	0	0	0	0
Blue Anchor	0	0	0	*1	*1	*1	*1	0	*1	0
Pine trees infected	67	15	5	0	0	0	0	0	0	0
Currant plantings	*2	*2	*4	*2	*1	*1	*1	0	*1	0

*Numbers starred (*) refer to plantings of currants infected with rust. All other figures refer to number of individual pine trees infected. †Up to June 30, 1925.

The infection reported for Blue Anchor in 1924 was found by Mr. J. F. Martin, of the Federal Bureau of Plant Industry, who stated that it occurred on cultivated black currants.

Seed Certification

1. *Late Crop White Potatoes.*—This work is conducted by the New Jersey Department of Agriculture in cooperation with the New Jersey State Potato Association. During 1924 no changes were made in the rules and regulations covering this work.

The work of entering new strains and testing the old ones has been continued in the certified seed test plots.

The season, 1924, was marked by a 66 per cent increase in the acres entered, though the number of growers remained approximately the same as in 1923. Looking still further, we find that of the acres entered 86 per cent passed all inspections and were certified. In 1923 only 50 per cent were certified. This improvement may be due to several things, such as better seed, better cultural conditions or greater care in roguing, but is, in all probability, a combination of all of them. From any viewpoint, it shows a very gratifying development of the industry.

The following tables give a resumé of the work:

VARIETY	Entered		Rejected Acres	Certified	
	Acres	Growers		Acres	Growers
Irish Cobbler	731.5	66	90	641.5	59
Spaulding Rose ..	20.5	4	9.5	11	2
Green Mountain .	4.5	1	0	4.5	1
Norcross	1	1	0	1	1
	757.5	66	99.5	658	59

The relative importance of the various causes for rejection is indicated in the following table:

CAUSE	First Inspection (per cent)	Second Inspection (per cent)	Total Rejections (per cent)
Leaf roll	59.5	100	90.4
Mosaic	40.5	0	9.6
	100	100	100

This table indicates the importance of the disease known as "leaf roll." Its import is still greater when we know that all the mosaic referred to in the table was on the Spaulding Rose variety. In other words, leaf roll caused all the rejections in the Irish Cobbler variety, the most important variety of white potatoes in New Jersey.

2. *Sweet Potatoes.*—During 1924, a total of 50.16 acres of sweet potatoes was entered for certification by 12 growers in Atlantic and Cumberland counties. These were all certified. They were distributed by counties as follows:

County	*Acres*	*Growers*
Cumberland	35	2
Atlantic	15.16	10
	50.16	12

According to varieties the acreage was as follows:

Variety	*Acres*	*Growers*
Yellow Jersey	38.33	10
Big Stem Jersey	6.5	3
Red Jersey	5.33	6
	50.16	12

3. *Tomato Seed.*—The following table gives a resume of the work of certifying tomato seed in 1924:

Variety	*Entered*		*Certified*	
	Acres	*Fields*	*Acres*	*Fields*
Bonny Best	137	16	117	14
Greater Baltimore	240	28	210	26
	377	44	327	40

The rejections were made where fields were not entirely true to type.

4. *Seed Corn.*—This work has been done by the State Department of Agriculture in cooperation with the Department of Agronomy of the Agricultural Experiment Station. A resumé of the work follows:

Variety	*Field Inspections*		*Bin Inspection*	*Acreage*
	First	*Second*		
Schmidt's White Cap Yellow Dent	2 passed	2 passed	1 passed	5
			1 rejected	1
Reid's White Cap Yellow Dent	1 passed	1 passed	1 rejected	1.5

Of the three fields entered for certification, two were rejected. In one case the field was planted late and did not properly mature. In the other case the seed showed a low germination.

The very unfavorable weather conditions had much to do with the results of the work.

The Gipsy Moth*

A complete account of the fifth year's extermination work will be published as a Department circular, but it is not out of place to state here that another successful year's work has been accomplished. Scouting was started during the last of August, 1924, and continued in the infested area until January 1, 1925, by which time only 2 colonies, totaling 6 new egg masses, had been found. On account of such few findings in the inside area, it was decided to discontinue most of the work there and instead to scout a band 10 miles wide around the entire infested area. This was done, and only one colony of 9 new and 3 old egg masses was found in the city of Elizabeth, presumably introduced some years back on nursery stock. The small force working in the inside area found 8 colonies aggregating 60 new egg masses, bringing the total for the year up to 9 colonies and 69 egg masses.

*Work conducted in cooperation with the Bureau of Entomology, United States Department of Agriculture.

The following table showing the findings by years is proof of the high type of work that is being done and points plainly to the fact that extermination of the moth in New Jersey is in sight and will be brought about if sufficient funds are appropriated:

	First Year	*Second Year*	*Third Year*	*Fourth Year*	*Fifth Year*
Number of colonies found	855	216	98	48	9
Number of egg masses found	3,003,039	909	1,182	723	69

Chopping, spraying and other measures were continued as in former years. The season was particularly favorable for spraying, very little time being lost on account of adverse weather. Quarantine work in the nurseries was continued as usual. The infested area, for practical purposes, should be considered as about 200 square miles.

Expenditures During 1924–1925

State Appropriation		$95,000.00
Labor	89 per cent	
Supplies	2 per cent	
Office expense, rentals, insurance, etc.	3 per cent	
Travel	6 per cent	
	100 per cent	
Federal expenditure in New Jersey for labor, supplies, field supervision, etc.		$157,800.00
Total amount expended		$252,800.00

Work of Special Inspection Force

Following is the work accomplished by the special inspection force for the fiscal year ending June 30, 1925:

Nurseries inspected	193	
Nurseries certified	54	
Potato tuber moth inspection, acres scouted	555	
Special inspections	107	
Foreign inspections	41	
Corn borer scouting, acres scouted	4,701	
Peach yellows survey	17	days
Christmas tree inspections	9,000	trees*
Lumber and stone inspections	9	
Gipsy moth scouting	38	days
New England inspections	1,618	
Inspections of New England stock prior to 1919	147	
Domestic inspections	31	
Tent-caterpillar eradication work	10	days

*Located in 59 different towns.

NURSERY INSPECTIONS

One hundred and ninety-three nurseries were inspected for certification by the special inspection force, and 54 of these were reinspected and certified, this work being done mostly during July, August and September, and often done in connection with other work, especially those nurseries certified later in the season.

POTATO TUBER MOTH INSPECTION

Due to the fact that the potato tuber moth was found in carlot shipments of seed potatoes from the Eastern Shore last shipping season, or during March, it was decided that the fields where such seed potatoes were planted should be inspected. This was mainly in the vicinity of Freehold, Englishtown and Marlboro. Approximately 600 acres were scouted during the summer of 1924 for this insect, but the results were negative.

SPECIAL INSPECTIONS

One hundred and seven special inspections were made for residents in the State who requested help in combating insect pests and diseases. Advice and control measures were given.

FOREIGN INSPECTIONS

Forty-one shipments of foreign nursery stock were inspected and found satisfactory with the exception of some few cases which were slightly infested with crown gall.

CORN BORER INSPECTIONS

Four thousand seven hundred and one acres of corn in various sections of the State were scouted for the European corn borer. This work was often done in connection with other work. The results were negative.

PEACH YELLOWS SURVEY

At the request of the Horticultural Extension Service at New Brunswick, and the County Board of Agriculture of Cumberland County, Mr. Grant spent 17 days making a survey in the vicinity of Vineland and Bridgeton. This work was done during August, 1924.

CHRISTMAS TREE INSPECTIONS

Over 9,000 Christmas trees were inspected during part of the two weeks preceding Christmas. This was done in 59 different towns throughout the State. All of these trees originated in sections of the New England quarantined area.

LUMBER AND STONE INSPECTIONS

Nine inspections were made of lumber and stone originating in the infested area of New England. Results were negative.

GIPSY MOTH SCOUTING

Approximately 40 days were spent at this work, and part of this time was devoted to the parks of the Essex County Park Commission.

NEW ENGLAND INSPECTIONS

During the fiscal year, 1,618 shipments of nursery stock from New England were inspected. Many thousands of plants and trees were included, and in some cases as high as 3,000 trees were handled and inspected in a single month by one man. Twenty-four of the total inspections were carlot shipments. In connection with this work all fruit stock was inspected for crown gall and hairy root. During this service 2,856 trees were inspected and 381 condemned. The New England inspection work for the fiscal year was very successful. Only one shipment was infested with gipsy moth. This was consigned to Bobbink & Atkins at Rutherford, New Jersey, from the Kelsey Highlands Nursery Company, at Boxford, Massachusetts. On this shipment there were four egg masses untreated and numerous molt skins and pupa cases. This shipment was thoroughly inspected and then sprayed, together with the section of the nursery in which the shipment was received.

NEW ENGLAND INSPECTIONS SHIPPED PRIOR TO 1919

During June we inspected New England shipments of nursery stock that were shipped into New Jersey prior to 1919. One hundred and forty-six of these shipments were looked up and inspected, when possible, together with the surrounding vegetation, for any possible spread. Results were negative.

TENT-CATERPILLAR WORK

At the request of and in cooperation with the Township Committee at Pompton Plains, we started a tent-caterpillar eradication campaign which resulted in serving 300 residents of that township with notices instructing them how to eradicate the pest. About 12 days were spent doing this work, as all of the notices were followed up by re-inspections.

AGRICULTURAL WEEK

About 10 days were spent preparing for this Bureau's display at the annual Agricultural Week exhibit held at Trenton.

Japanese Beetle Project Report*

INTRODUCTION

During the fiscal year, 1925, several changes have been made in the personnel and general organization of the Japanese Beetle Project. As a result of a broadening of the lines of investigation and the increased demands for further studies pertaining to the various problems, it was necessary to reorganize both the research and quarantine work. This has resulted in increasing the number of main divisions from six to ten, which are as follows: Administration, Maintenance, Quarantine, Biological, Parasite, Physiology, Foreign Parasite, Beetle Insecticide, Grub Insecticide and Chemical Research.

There have been no radical changes in the policy of the laboratory regarding the research work, and investigations have continued along much the same outline as designated in the report for the fiscal year 1924.

During the fiscal year 1925, the following appropriations have been available for the Japanese Beetle Project:

United States Department of Agriculture	$241,070.00
New Jersey Department of Agriculture	45,000.00
Pennsylvania Department of Agriculture (balance of biennium appropriation)	8,000.00
Eastern Pennsylvania Counties	11,500.00
Total	$305,570.00

*By L. B. Smith.

WORK ACCOMPLISHED

An intensive study was made during the past three years on the value of a large number of organic compounds as soil insecticides. This work was completed during the past fiscal year, and the results have been published in a paper by Dr. W. E. Fleming. The conclusions drawn from these studies indicate that carbon bisulphide is superior for practical uses to any of the chemicals which were studied. Investigations were also completed on the dipping of plants with soil ball about their roots in various solutions in order to destroy the larvæ of the Japanese beetle. In this connection it was found that even in cases where the soil ball was exceedingly small the kill obtained by means of the dipping was not constant, and, therefore, in the light of our present knowledge, this means is not practical to use where it is necessary to obtain 100 per cent control. The results of these investigations are now in manuscript form and will be published during the coming winter. During the autumn of 1924, it was found that the resin fish-oil soap, recommended as an emulsifying agent for carbon bisulphide, produced an emulsion likely to stratify on standing. For this reason it was necessary to devise an emulsion for the nursery treatment operations which would not separate in the container. As a result of investigations carried on during the winter, a new emulsion was devised, known as a carbon bisulphide-potassium oleate-alcohol emulsion. The formula for making this emulsion is as follows:

Carbon bisulphide, Technical	751.8	lbs.
Alcohol (Denatured, Formula 6)	21.4	gal.
Oleic acid, U. S. P.	63.76	lbs.
Potassium hydroxide	12.5	lbs.

The potassium hydroxide is dissolved in the alcohol and the oleic acid added to the mixture. To this preparation is added the required amount of carbon bisulphide, which results in a mixture containing approximately 71.4 per cent carbon bisulphide. It was found that this emulsion would not stratify or break down on standing, and as a result of its improved qualities it was adopted in the official treatments of nursery stock and balled earth plants during the spring of 1925. Papers dealing with the technique and method of preparation of this emulsion are in press at the present time.

In the past, balled nursery stock has not been successfully fumigated in a closed container because the aerial portion of the plant succumbed to the action of the gas. As a result of investigations a

closed container has been devised for this purpose. It consists of a tank filled to a certain level with water, leaving a large enough space above for the gas. The plants are inverted and the aerial portions of the plants submerged while the soil balls are exposed to the action of the gas. Carbon bisulphide has been found most satisfactory as a fumigant. The data thus obtained indicate that this method may be practical for large-scale treatments for certain classes of nursery stock. This work was the subject of a paper by Messrs. Leach and Fleming, published during the past winter.

During the summer and autumn of 1924 work was continued on methods of treating golf greens to destroy the larvæ of the Japanese beetle. Through cooperative efforts with a local commercial concern, a proportioner was devised which eliminates the use of a large tank as a container for the dilute emulsion which is applied to the green. The proportioner is of such a nature that it can be attached to the hydrant and connected to the distributing hose. The flow of water and the pressure are regulated by the outfit and at the same time the required amount of concentrated carbon bisulphide emulsion is added to the water stream as it passes through the machine. Several golf clubs treated their greens with the outfit during the past autumn with good results. This outfit will be of inestimable value to golf clubs, since it can be used not only in Japanese beetle control work but as a means of applying many insecticides and fungicides to the greens or to lawns.

The year 1924 marked the definite establishment in this country of the parasite *Centeter cinerea*. This is a Tachinid fly which ranks first in importance among the parasites of the Japanese beetle in Japan. The establishment of this parasite in reality took place in 1923, when 6,400 flies were liberated in a field between Riverton and Moorestown, New Jersey. The question as to whether the species would withstand our winters and the resulting hardships imposed upon it was answered by its reappearance in 1924. On July 3, 1924, eight *Centeter* eggs were found on newly emerged Japanese beetles, thus proving conclusively the establishment of this important parasite. A careful survey was then undertaken with the final result that its presence was conclusively determined over an area of approximately 12 square miles.

WORK UNDER WAY

Administration (Loren B. Smith, Entomologist in charge).—The administrative division is responsible for the general supervision of the entire project, purchasing of supplies, handling of accounts, and

all other general duties of an administrative nature. In addition, certain special lines of investigation which do not logically fall within the scope of one of the other divisions are carried as an administrative project. An advisory committee, composed of representatives of each of the cooperating States, the Bureau of Entomology, and the entomologist in charge of the project, formulates the general policies relative to the work as a whole. Regular quarterly meetings of the advisory committee are held, and such additional meetings as are necessary to keep all of the cooperating agencies in close touch with the work.

Maintenance (A. R. Whitcraft, Senior Scientific Aid, in charge).—The maintenance division is charged with the upkeep of all buildings and properties used by the several divisions. It also maintains the automobiles allotted to this project. At the close of the fiscal year 1925, there were approximately 75 automobiles of various types used on the Japanese Beetle Project, most of these being used on the different phases of the quarantine work. This division also carries on the spraying operations exclusive of investigational work.

Quarantine Division (C. W. Stockwell, Senior Administrative Officer, in charge).—The work of the Quarantine Division is divided under two main heads: quarantine and scouting. The quarantine includes the operation of the farm products quarantine, nursery quarantine and the regulation of movement of sand and soil. The other division includes scouting inside and outside of the regulated area to determine the spread of the insect. While much of the work was confined to New Jersey and Pennsylvania, due to the fact that Delaware was included in the area in the spring of 1924 considerable work was done in that State throughout the year. The area designated under Quarantine No. 48, Third Revision, April 9, 1924, consisted of 3,289 square miles and contained a population of approximately 2 813,658 people.

On December 31, 1924, there were included 1,113 commercial dealers in nursery stock in the area. In addition there were 300 to 400 small dealers who sell plants occasionally or who carry on a very small local business. The following table shows the number under each classification and indicates that 227 deal in certified stock while 886 deal in uncertified stock:

NURSERIES, GREENHOUSES, ETC., WITHIN THE JAPANESE BEETLE QUARANTINED AREA, JANUARY 1, 1925

	Not Certified	*Certified*	*Total*
Greenhouses	441	59	500
Nurseries	90	79	169
Nurseries and Greenhouses (combined)	23	9	32
Dealers	28	15	43
Vegetable plant growers	20	11	31
Floral shops	272	8	280
Miscellaneous Growers and Shippers	12	46	58
Grand total	886	227	1,113

In order to obtain certification, nurseries and greenhouses within the infested area are required to disinfect soil, treat and wash all nursery stock and report all shipments in accordance with the regulations.

Inasmuch as the infestation is becoming general around a large number of greenhouses, a more permanent method of screening was adopted by several of the larger establishments. Previously ordinary cloth screening had been used on doors and ventilators of greenhouses to keep the beetles out. This method was unsatisfactory and costly. As a result copper screening has been resorted to, and while the initial outlay is greater, it has proven more satisfactory. One concern has used 30,000 square feet to screen the ventilators and doors of their greenhouses.

Considerable quantities of deciduous trees and perennial plants which can be shipped free from soil must necessarily be washed before the roots can be inspected. A large amount of this type of stock is cleaned under supervision of our inspectors each year. Trees and shrubs are usually washed free by means of a hose, while the roots of perennial plants are cleaned without injury by washing them in tubs of water. It has been found that certain types of plants suffer to some extent from the washing. These it has been necessary to treat with carbon bisulphide or wormseed oil emulsion.

When the nursery quarantine was first applied several years ago, it was realized that an embargo on the movement of nursery stock with soil about the roots, out of the Japanese beetle area would work a serious hardship on nurserymen and others located in the area infested or which would soon be infested. The policy was adopted that, providing treatments were found which would *entirely free the soil from infestation,* plants with soil about the roots would be certified for shipment after they had been treated and all infestation destroyed. It then became a problem of revising methods of soil treat-

ment which would give a complete kill of the grubs without injury to plants. At the time these investigations were undertaken little was known concerning treatment of soil under such conditions, and much preliminary work had to be done before a method was found which would serve the purpose desired. After various measures had been tried without success, the possibilities narrowed down to the use of a chemical. Long and detailed experiments were performed with many materials. This resulted in developing the use of carbon bisulphide (CS_2) as a soil insecticide for the control of the Japanese beetle. It was found that exceedingly small dosages of this chemical were extremely toxic to the immature stages of the insect, and to obtain a uniform distribution through the soil it became necessary to employ some dispersing agent, such as water. Since carbon bisulphide is relatively insoluble in water, a homogenous emulsion was prepared which contains 71.4 per cent carbon bisulphide. The dilution and volume of dilute solution applied to the soil depend upon the soil temperature, kind of soil, class of plant to be treated, etc. An emulsion of oil of wormseed was also found to possess high toxicity on the Japanese beetle grubs. It is more costly than carbon bisulphide and is used only in the case of a few species of matted-root perennials which will not withstand treatments of carbon bisulphide.

Minimum Lethal Dosage.—With the temperature at 70° F., a dosage of 0.375 cc. of carbon bisulphide to a liter of water was necessary to obtain a complete kill of the eggs, larvæ and pupæ of the Japanese beetle. This is equivalent to 30 cc. of carbon bisulphide emulsion containing 71.4 per cent of carbon bisulphide diluted in 16 gallons of water. The following tabulated statement summarizes the dosages which have been found to give a complete kill at various temperatures:

Soil temperature 60°F. or above—2½ cc. of carbon bisulphide emulsion to 1 gallon of water.
Soil temperature 55–60°F.—3.125 cc. of carbon bisulphide emulsion to 1 gallon of water.
Soil temperature 50–55°F.—3.75 cc. of carbon bisulphide emulsion to 1 gallon of water
Soil temperature 42–50°F.—4.375 cc. of carbon bisulphide emulsion to 1 gallon of water
Soil temperature 35–42°F.—5.0 cc. of carbon bisulphide emulsion to 1 gallon of water.

These represent the dosages used in commercial treatments, and are from 20 to 50 per cent higher than is necessary to obtain a complete kill of the grubs in sandy loam soil. Special potting soils containing from 30 to 75 per cent peat require higher dosages. It will be ob-

served that an ample margin of safety is maintained in the dosages used under commercial conditions. In addition to the experiments to determine the lethal dosages on the insects, it has been necessary to treat experimentally thousands of out-door-grown plants in order to find a maximum dosage which could be safely applied. The dosages in all cases are just below the concentration causing injury to the plants. In fact, certain varieties, such as hydrangeas, suffer a slight injury from the treatment. Such injury is not permanent and the roots usually grow out again in 2 or 3 weeks.

Many varieties of potted plants require a volume of dilute carbon bisulphide emulsion equivalent to one-half of the volume of soil. Under certain special conditions, such as in the case of Cybotiums and other plants grown in soil containing a large proportion of peat, it has been necessary to use a volume of liquid equivalent to the total amount of soil.

Farm Products Inspection.—In New Jersey the certification of farm produce has been taken care of at the farm or point of production, since the majority of produce grown in this State moves direct from the farm to markets outside of the quarantined area. During the season of 1924, 1,182,459 baskets of tomatoes were certified; 182,177 baskets of beans and 155,116 bags of sweet corn were inspected and certified. All of the products which came under the quarantine and which were certified and inspected constitute a list of 1,612,287 packages. From these, 68,476 beetles were removed from sweet corn; 519 beetles were removed from peas and beans; 30 beetles from tomatoes; 4 beetles from cabbage and 1 beetle from cherries. In addition, there were 809 packages of assorted out-door-grown flowers, principally dahlias, from which 128 beetles were removed.

Of particular interest during the past summer has been the fact that an increasing amount of farm produce is being transported to distant markets, such as New York, by automobile truck rather than by rail. Figures compiled on shipments from the Riverton and Beverly districts follow:

	Packages
Peas and Beans	
By Truck	92,389
By Rail	20,380
Corn	
By Truck	141,705
By Rail	3,457
Miscellaneous Produce	
By Truck	31,657
By Rail	12,265

A total of 86.5 per cent of the produce moved was carried by automobile truck. These packages were largely consigned to New York, Connecticut and the New England markets.

Inspectors were placed on the roads leading from the regulated area, whose duty it was to stop all trucks carrying produce passing out of the area. It was found that during the summer there were 120 violations of the State quarantine. Twenty-eight of these were completely written up and supported by affidavits and turned over to the New Jersey Department of Agriculture for action. The violators were warned by the Attorney General, but no prosecutions were made.

Sand and Soil.—With the extension of the quarantined area to include South Jersey, the shipments of sand and soil are becoming an item of considerable importance. There are large amounts of sand, used for molding purposes and for the manufacture of glassware, which are shipped from the State of New Jersey to many points in the United States and Canada. It was found during the season of 1924 that 11,928 carloads of sand and soil were shipped from the quarantined area to 20 different States and Canada.

Scouting.—The scouting operations within the infested territory are carried on to determine the degree of infestation, particularly at and in the vicinity of the several nursery and greenhouse establishments.

The season's scouting showed that there was an increase in the infested area from 2,422 square miles in 1923 to 5,122 square miles in 1924.

Biological Division (Dr. Henry Fox, Associate Entomologist, in charge).—During the year 1924, considerable time was spent in obtaining data concerning the life history of the Japanese beetle and checking this with the findings of previous years. During the spring of 1924 the weather was cool, with excessive rainfall. These conditions caused the mean soil temperature to remain below normal, which in turn resulted in retarding all the soil stages and the final appearance of the adult beetles from 10 to 14 days. It was found that the heavily infested territory was much greater during 1924 than in any previous season, and included Woodbury, Collingswood, Berlin and Burlington, in New Jersey, as well as a strip approximately one mile wide extending along the Delaware River from Tacony to Torresdale, Pennsylvania. The infestation was found to be spotted, that is, local areas were heavily infested while nearby farms would have

very few beetles. The general trend of beetle distribution seems to be east, south and west, with less spread to the north.

A rather unusual condition occurred in late July and early August in the form of several large migrations of beetles into the City of Philadelphia, and particularly into the market districts and freight yards. Thousands of beetles appeared suddenly on several occasions and disappeared almost as suddenly several days later. The two most important migrations occurred on July 28th and August 10th, during both of which the beetles were abundant in Camden as well as in Philadelphia, and numerous beetles were seen flying over the river. An examination of these beetles showed that the females out-numbered the males considerably on both occasions, and as many as twenty fully-formed eggs were found in the oviduct of the females examined.

During the summer of 1924 an attempt was made to find the amount of food consumed by the adult beetles. The insects were placed in individual cages as soon as they had reached the pupal stage and each was fed daily on sassafras leaves. Two hundred and four beetles were fed in this way and 3,003 leaves collected. Calculating the average adult life, based on the data for longevity of each of the 204 beetles, the average was found to be 22.9 days. On the basis of the average life, groups were selected which appeared to be representative of the life period and feeding of an average beetle. Twenty-two beetles were thus selected, which ate a total of 364 leaves. The leaves were placed in a projector and enlarged 200 times, and the enlarged holes outlined on large paper sheets. The area of the holes was then measured by a planometer, and the total area eaten by each beetle was found. The results indicate that 5.8 square inches of leaf surface were eaten by each beetle, irrespective of sex. This work is being continued, and further determinations relative to the amount eaten by each sex will be available when the experiments are completed.

Surveys were made again in 96 localities in the heavily infested area to determine the larval abundance. It was found in the fall of 1924 that the average number of larvæ was slightly below the average of the last two years, although a few localities showed large increases. Surveys made in territory which became heavily infested during the season of 1924 showed a large increase in the number of larvæ present in the soil. Throughout the autumn of 1924 and the winter of 1924-1925 diggings were made at intervals of about two weeks to determine the downward movement of the larvæ through the soil. The larvæ did not go deeper than 7 or 8 inches at any time during

the season, and the average depth was about 5 inches, as compared with an average of 8 inches during the winter of 1923-1924.

Parasite Division (J. L. King, Associate Entomologist, in charge).—During the year 1924 considerable progress was made in parasite rearings and liberations, as well as in the increased number of species and quantity of foreign material received. This year also marked with certainty the establishment of *Centeter cinerea,* one of the more important parasites of *Popillia Japonica.* Some progress was also made on the biology of indigenous parasites of *Coleoptera,* as well as on the introduced species. During the summer of 1924 a releasement of 2,000 adult *Centeter cinerea* was made at Torresdale, Pennsylvania. In this instance fertile parasite eggs were observed on beetles in the immediate vicinity shortly after the releasement of the Tachinids. As this Tachinid is able to withstand our winters, it was assumed that the colony would, undoubtedly, continue. This was proven in the spring of 1925, when parasitized beetles were collected at this point.

In 1924 five shipments of *Ocromegenia orimoides* Town. were received. The first two shipments were divided, so that part was packed in ice from Seattle to Riverton, and part was expressed at car temperature. This demonstrated clearly the failure of iced material to survive the constant low temperature, while those shipped at normal temperature produced a number of perfect adults. It is anticipated that a large quantity of this material will be received during 1925. The flies which emerged from these shipments were active and are the first of this species to reach Riverton alive. There were 177 flies reared during the season of 1924, and all of these were liberated after being held in a large cage for 24 hours in order to obtain mating.

In 1923 about 190 specimens of *Eutrixopsis javanna* Townsend were reared and liberated at Riverton, New Jersey. This is a relatively rare parasite in Japan, and the first rearings at Riverton were made from a shipment of material containing *Centeter cinerea.* In 1924 no trace of this species was found.

In June, 1924, a shipment of 49,000 Japanese beetle grubs arrived at Riverton from Japan. Thirteen per cent of these host larvæ contained the dexiid parasite *Prosena siberita* Fabr. The grubs were removed from the soil and placed in rearing trays containing fresh soil and sod. These were divided into sections, to allow about 1 square inch of soil to each grub. The trays were then placed in a large rearing cage, which was constructed to prevent the escape of

any secondary parasites. The inside dimensions of this cage were: 22 feet long, 7 feet wide and 6 feet high, and the cage was constructed of wire screening and heavy muslin. As the dexiid flies emerged from the soil they were collected on the sides of the cage and later released. Between June 27th and August 8th, 4,975 adult *Prosena* were released near Moorestown, New Jersey, at the same point that a small releasement had been made in 1923. Later in the season one female of this species was found in Riverton, a distance of 4.5 miles from the point of liberation. No record has yet been made which would give evidence that this species is established.

A large number of *Tiphia* shipments was received in 1924. Most of this material was from Korea and consisted of cocoons of *Tiphia vernalis*. Some material was also received from China which contained several unknown species of *Tiphia* as well as a species of *Campsomeris*. The exceedingly high mortality of the scoliids, due to fungi which attacked the cocoons, has caused the establishment of these parasites to be a slow and difficult procedure. Releasements have been made of certain *Tiphia* for the past three years, but to date no evidence has been found which would indicate that they are established. It is anticipated that during the season of 1925 attempts will be made to ship the live adults of these species from the Orient to New Jersey. This method of shipment was successful in the case of *Scolia manilæ*, shipped from Hawaii to Riverton, and if the same method of shipment is successful from China and Japan, it will hasten the day when these species are established in the United States.

Beetle Insecticide Investigations (E. R. Van Leouwen, Assistant Entomologist, in charge).—Substantial progress has been made in connection with the study of the effect of insecticides on the adult beetle. The control work in the field during the season of 1924 covered the spraying of nearly 80 acres of fruit trees. All the well-known commercial varieties of apple, peach, cherry and grape were included in the experiments. The results proved that an application of lead arsenate, used at the rate of 3 pounds to 50 gallons of water, to which 2 pounds of flour were added, applied in a careful manner at the proper time, will control the beetle in all orchards except the peach. Late peaches sprayed with 1½ pounds of arsenate of lead and 3 pounds of freshly slaked lime to 50 gallons of water will protect this crop. The control of the beetles on early ripening peaches still remains a problem. The beetles emerge in large numbers just previous to the time the early peaches are harvested, and it is im-

possible to spray them with arsenicals since they would reach the market with heavy deposits of arsenic on the fruit.

Studies have been conducted relative to the toxicity of various insecticides, and thus far the indications are that an improved insecticide for Japanese beetle control will consist of lead arsenate together with a suitable material which will attract the beetle to the poison and cause it to feed on the sprayed foliage, or else a combination of arsenate of lead and some material which will coat the poison and render it less distasteful to the beetle and at the same time cause it to stick or remain on the foliage for a longer period of time than does arsenate of lead alone.

Further work with stickers and spreaders added to the poison spray to increase its efficiency has been conducted, using various percentages and combinations of such material as flour, skim milk, lime, gum-arabic, calcium caseinate, fish oil, several commercial emulsified oils and insoluble soaps. The insoluble soaps, such as lead oleate, have proven to be the most efficient stickers and spreaders.

In testing insecticides against the Japanese beetle, over 800 cage experiments were made during the past summer, and it was found that molasses added to lead arsenate at the rate of 2 gallons to 50 gallons of water increased the kill of the beetles actually on the tree at the time of application by nearly 40 per cent. As far as could be determined there was no attraction of the beetles to the trees sprayed, but it was found that while the spray was still wet the beetles would drink the sweetened liquid. Variable results under cage conditions are tending to change the method of testing insecticides for this insect. One of the more important phases of investigation during the next year or two will be the working out of methods which are more accurate than the ordinary cage tests of determining the efficiency of various insecticides.

The studies in connection with the influence of the spray deposit on the movements of the beetle have proven most interesting. It was found that white materials are apparently repellent, and lime, barytes, China clay and chalk, for a short time after they are applied, have repellent qualities almost equivalent to arsenate of lead. It was also found that dilute acetic acid, or an insecticide containing a small amount of this chemical, tended to be somewhat attractive. Further work is being carried out during the season of 1925 on this point. In addition to testing out a large series of chemical compounds, various proprietary insecticides and other materials have been tested from time to time for the purpose of obtaining information as to

their value for controlling the Japanese beetle. Some work was undertaken as time would permit on the question of developing an efficient and cheap contact insecticide. Some progress was made, but owing to the rush of other work, this problem did not receive the attention necessary to bring it to a successful conclusion. It is anticipated that during the season of 1925 further and more detailed work will be carried out along these lines. On the whole the progress made during the past year in the beetle insecticide division is extremely promising. Several materials are in process of development which will undoubtedly be of great value in the future control of this insect. Owing to the shortness of the season in which these experiments can be carried on, progress is necessarily slow. As a result of the work during the past season the following recommendations for spraying were issued in the spring of 1925:

For Apples: Three pounds powdered lead arsenate and two pounds flour (12 per cent gluten content) to 50 gallons water. Mix lead arsenate and flour dry, make a paste, dilute, and strain into tank.

For Late and Non-bearing Peaches: One and one-half pounds powdered lead arsenate, two pounds flour, and three pounds freshly slaked lump lime to 50 gallons water. Mix as above.

Cherries: Same as for apples; immediately after harvest.

Grapes: Same as for apples; or three pounds powdered lead arsenate combined with 4-5-50 Bordeaux Mixture, omitting the flour.

Ornamental and Shade Trees: Same as for apples.

Notes: Spray should be applied, if possible, before infestation occurs. Spraying should be exceptionally thorough—a super-job of spraying. Both upper and lower surfaces should be covered. Pay special attention to growing tips and to tops of trees. Avoid spraying on excessively hot days.

Grub Insecticide Division (B. R. Leach, Associate Entomologist, in charge).—The work in this division has continued along much the same lines as during the previous year, 1924, the most important development being the working out of satisfactory measures of treatment of balled nursery stock. Experiments have been continued on the treatment of conifer nursery stock, which is normally shipped with soil about the roots, and the method of treating the roots of plants while they are standing in the row has been perfected. It was found necessary to develop a new carbon bisulphide emulsion for this purpose, and during the winter of 1924-1925 an emulsion was prepared which appeared to be satisfactory and which was used in treating plants in the spring of 1925. There are still many points concerning the emulsion and limitations in connection with its use which remain to be worked out. It was found during the autumn of 1924 that potted stock could not be successfully treated by methods now in use. As a result this whole phase of investigation still re-

mains open and will necessitate a large amount of investigational work before methods are developed which will be satisfactory from the standpoint of the commercial treatment of such classes of stock.

Grub Insecticide.—A method of fumigating the soil ball about the roots of conifer and other plants was developed during the past year. A container was devised for this purpose which consists of a tank filled to a certain level with water, leaving a space above large enough for the gas. The plants are inverted and the aerial portions submerged while the soil balls are exposed to the action of the gas. Carbon bisulphide is used as a fumigant in this method. It was found that the grubs can be killed in soil balls 12″ to 15″ in diameter with an eight- to ten-hour exposure to the gas. It appeared that this method of controlling the larvæ might have some practical application to some classes of nursery stock which could not be treated by any other means, and a large tank was built in which tests can be made under conditions approximating those found in the nurseries.

Studies relative to the use of stomach poisons in the soil as means of control for the larvæ of the Japanese beetle are being conducted and the work broadened out to include fluosilicates, antimony compounds and other chemicals which may have value for this purpose.

Work has been carried on for the past two summers with the object of measuring the absorption of emulsified carbon bisulphide when percolated through a soil column. The method of titration of the percolate has been worked out. It has now been proposed to determine, if possible, those factors which influence absorption, together with means of increasing or decreasing this phenomenon in actual practice.

Investigations are under way relative to the use of naphthaline and other organic salts as fumigants for potting soil. Preliminary experiments indicate that materials of this type have certain value as toxic agents for the grubs, when mixed with the soil at the rate of a few pounds per cubic yard. It is anticipated that considerable work will be done along these lines during the coming season.

Work is being conducted on the control of the larvæ of the Japanese beetle in lawns and golf courses, and data are being accumulated not only for the Japanese beetle but on certain other soil-infesting insects as well. It is planned to broaden this phase of investigations to include a study of methods for the control of soil-infesting insects over large areas of turf. It is anticipated that there will be developed a cheap and non-laborious method which will be practical to use where several acres of sod land are to be thus treated.

One of the more important phases of work for which this division is responsible is the supervision of all treatments of nursery stock under commercial conditions. This work has been done in cooperation with the Quarantine Division and has entailed an enormous amount of detail, since accurate records are kept of each plant which is treated, its origin and final destination. In addition to this, it will be necessary to follow up shipments which were treated in order to determine the effect of the treatment on the plants. The responsibility for these commercial treatments and conditions under which they are applied rests entirely with the Grub Insecticide Division.

Chemical Research (W. E. Fleming, in charge).—This division was recently formed, and work is under way on the following general topics:

Investigation of organic compounds as soil fumigants for the purpose of obtaining, if possible, a more satisfactory soil fumigant than carbon bisulphide. It has already been shown that a mixture of carbon bisulphide and a small amount of mustard oil is more toxic than carbon bisulphide alone. This applies not only to the use of the combination of materials in the form of a gas, but to the emulsions as well. In conjunction with the Grub Insecticide Division, work is proceeding in the development of improved carbon bisulphide emulsions and the treatment of evergreen nursery stock in the row.

The study is being made of the possibility of using emulsions of organic chemicals as contact insecticides for the adult Japanese beetle, and also the possibility of developing the use of certain aromatic and aliphatic acids as possible contact insecticides.

A large amount of work is being done in the attempt to develop an arsenical substitute for the adult Japanese beetle. Flurine compounds, naphthaline derivatives and salicylic acid derivatives appear to offer some possibilities in this connection. It is also planned to have certain of the war chemicals studied with the object of determining their possible insecticidal value.

It has been felt that many good insecticides have been discarded because of the injury which they cause to plants when they are applied to the foliage in the form of a spray or dust. One of the many phases of investigation in this division will be a study of the causes of plant injury and the working out of methods to overcome the injurious effect which chemicals have on the foliage. It is believed that the toxicity of the insecticide on the plant can in many cases be overcome by physical or chemical methods without lowering the toxicity of the material on the insect.

Physiology (E. A. Richmond, Agent, in charge).—The more important problem of investigation in this division has been under way for three years, namely, the study of the chemotropic reaction of the Japanese beetle. A paper dealing with some of the results already obtained was prepared and presented at the annual meeting of the Association of Economic Entomologists, January 3, 1925, but was withdrawn in anticipation of a more extensive manuscript. This investigation was divided into several problems: First, to determine which of many essential oils are attractive, neutral or repellent to the Japanese beetle on the basis of their odor; Second, a study of organic chemicals for the purpose of finding attractive or repellent agents for the insect; Third, to determine and work out practical measures of control by means of attractive or repellent agents; Fourth, a study of methods used in determining chemotropic response of the Japanese beetle. In addition to the chemotropic project, studies are being conducted on phototropic reaction with the object of leading to a broad study of the several tropisms. In addition to this, as time will permit, studies are being made of the physiology of both the larvæ and adult Japanese beetle, with particular reference to the effect of insecticides upon the organism. On the basis of the work performed during the summers of 1922, 1923 and 1924, it was found that the alcohol Geraniol is a specific attrahent of the Japanese beetle. During the summer of 1924 over 65,000 beetles were collected from the bait-can experiments. Nearly 50,000 of these beetles were present on the geraniol baits. It was found that the female beetles are attracted approximately one-third more frequently to geraniol than are the males. Studies were made of various baits, and it was found that molasses acted as a negative or at most only of slightly attractive value. It was found that bait mixtures, notably bran, molasses and geraniol, will retain the geraniol odor over long periods if protected from rain. Efforts are now being made to incorporate geraniol in poison sprays, and to this end experiments on the absorption of this chemical by certain compounds are under way. Studies are also being conducted on the value of emulsion of geraniol, particularly in combination with poison sprays or poison baits. It has also been found that eugenol, citrol and citronellel have some value as attractive agents.

A list has been made of those plants upon which the Japanese beetle will not feed, and studies are under way of the constituents of these plants, with the purpose of finding some chemical which is distinctly repellent. At the present time oil of tar appears to have

some value as a repellent agent, and efforts are being made to work out a practical method for its use.

Report of the Bee Inspection Service

HARRY B. WEISS, *Chief*

THOMAS J. HEADLEE, *State Entomologist*

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

The work of bee disease control has been carried out on the same lines as adopted a few years ago, nothing having developed to indicate that any material changes in the plan would result in better disease control or greater development of the beekeeping industry of the State.

Requests for inspections have been cared for as soon as practical, and territory in which bee disease is suspected or known to exist has been given preferred attention.

The response of disease to treatment has been gratifying on the whole. In some cases there has been an unwonted persistence of the disease, but it is gradually yielding to proper control measures.

There have been some appearances of American foulbrood in hitherto uninfested areas, where no contaminated hives or bees have been introduced so far as could be learned. Presumably the disease came in contaminated honey which the bees had got from a discarded container. This is a possible source of infection against which we have no effective protection.

The calls for the bee inspector's services during the first part of the season of 1925 were more than in any other similar period. This is considered an encouraging sign. It probably shows not only an interest in the healthfulness of the bees, but also a desire to control any disease which may have appeared.

INSPECTIONS

During the fiscal year ending June 30, 1925, 245 apiaries were inspected. The total number of colonies examined was 3,601. All of these except 66 were in some type of movable frame hive. Two hundred and thirty-two cases of American foulbrood were found, 87 of European foulbrood and 90 of sacbrood.

A beekeeper near Freehold experienced a great loss of adult bees in the spring of 1925. An investigation was made but nothing definite regarding the loss or a remedy for it was learned.

QUEEN REARERS' CERTIFICATES

The queen-rearing apiaries listed below were examined, found free of infectious or contagious diseases and were certified:

July 22, 1924—Robert B. Spicer, Wharton, R. F. D., Morris County.
July 29, 1924—Albert G. Hann, Glen Gardner, Hunterdon County.
August 4, 1924—J. Field Garretson, Bound Brook, R. F. D., Somerset County.
May 13, 1925—Albert G. Hann, Glen Gardner, Hunterdon County.
May 18, 1925—Robert B. Spicer, Wharton, R. F. D., Morris County.

INTERSTATE SHIPMENT CERTIFICATION

To comply with the legal regulations, two shipments of bees destined to move in interstate traffic were examined, found free of disease and certified. One was destined for Pennsylvania and the other for Virginia.

EXHIBITS

An exhibit of modern beekeeping apparatus was made at the Morris County Fair, Morristown, September 24-27; also one at the Armory, Trenton, during "Agricultural Week," January 12-17. An exhibit of New Jersey honey was made at the Steel Pier, Atlantic City, at the time of the Horticultural Society and Grange meetings, November 13-17.

FIELD MEETINGS AND DEMONSTRATIONS

Meetings and demonstrations in apiaries still continue to be attractive to beekeepers of New Jersey, and there is evidence that a steady improvement in the beekeeping practices throughout the State is brought about through these meetings.

Through the cooperation of the State Department of Agriculture and the New Jersey Beekeepers' Association, six such meetings have been held during the fiscal year.

At the meeting in C. A. Gulick's apiary near Hackettstown, on July 8, 1924, there was an attendance of 41; at Charles McWilliams' apiary, Ledgewood, on July 23, 46; at H. S. Kasoakian's apiary, Teaneck, on September 13, 31; at C. A. Olmsted's apiary near Lakewood, on May 29, 13; at A. S. Lupton's apiary, Shiloh, on June 5, 15, and at Edward Morgan's apiary near Sparta, June 19, 40; a total attendance of 186.

Two meetings of the Essex County Beekeepers' Society were attended and a talk given at each. The attendance was 69.

MICROSCOPICAL DIAGNOSIS

Each season, and in particular the first part of 1925, cases of bee diseases have been found in which the gross symptoms are insufficient to make a positive diagnosis possible. A few years ago this would have been immaterial so far as knowing whether American foulbrood or European foulbrood was present in the hive, since the recommended treatment for both diseases was the same. With a better understanding of the two diseases it has become very important that it be positively known which disease is to be dealt with. The present-day treatment for American foulbrood requires the destruction or sterilizing of the contaminated combs, while this is not necessary in treating European foulbrood.

It has been found that the use of a microscope aids in determining the nature of bee disease in obscure cases, and this method of diagnosing has proved of special value this season, since the number of obscure cases has been much greater than usual.

PUBLICITY

A series of short sketches of a popular nature on the production of honey, its uses and food value, was published in the "Trenton Evening Times," as were also several more lengthy articles on beekeeping of a more technical nature.