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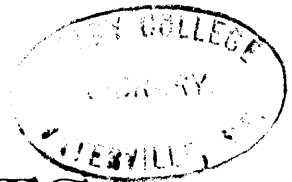
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# PUBLIC DOCUMENTS

OF THE

## STATE OF MAINE

BEING THE



# REPORTS

OF THE VARIOUS

PUBLIC OFFICERS  
DEPARTMENTS AND  
INSTITUTIONS

FOR THE YEAR 1918

VOLUME I

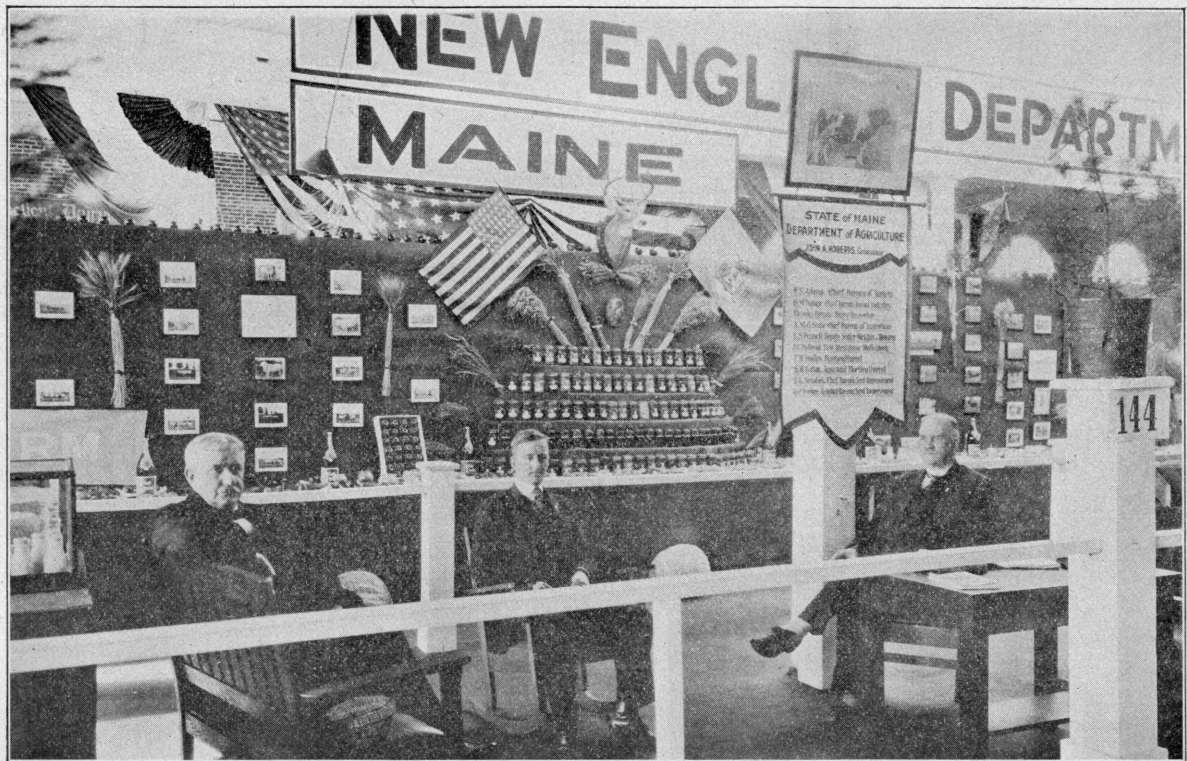


Exhibit by Maine Department of Agriculture at Springfield, Massachusetts, October, 1917.

AGRICULTURE OF MAINE

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SEVENTEENTH ANNUAL REPORT

OF THE

Commissioner of Agriculture

OF THE

STATE OF MAINE

1918





DEPARTMENT OF AGRICULTURE

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*To His Excellency, Carl E. Milliken, Governor of Maine, and  
Council:*

I herewith submit the seventeenth annual report as Commissioner of Agriculture of the State of Maine, for the year 1918, in compliance with Chapter 34, Section 9, Revised Statutes 1916.

JOHN A. ROBERTS, *Commissioner.*

Augusta, December 31, 1918.



MAINE DEPARTMENT OF AGRICULTURE.

JOHN A. ROBERTS, Norway .....*Commissioner*

STAFF.

FRANK S. ADAMS, Bowdoinham .....*Chief Bureau of Markets*

HERBERT M. TUCKER, Yarmouthville .....

.....*Chief Bureau Animal Industry*

C. H. CRAWFORD, Dexter .....*Sheep Specialist*

BROOKS BROWN,\* Dover .....*Dairy Inspector*

A. M. G. SOULE, Augusta .....*Bureau of Inspection*

LEVI S. PENNELL, Portland

.....*Deputy Sealer Weights and Measures*

EDWARD E. PHILBROOK, Portland.....

.....*Field Agent Gypsy Moth Work*

FRANK H. DUDLEY, Auburn .....*Horticulturist*

SAMUEL H. EATON,† Oxford .....*Assistant Horticulturist*

ERLON L. NEWDICK,‡ Sanford, *Chief Bureau Seed Improvement*

C. W. WHITE .....*Chief Bureau Seed Improvement*

GUY C. PORTER, Houlton, *Assistant Bureau Seed Improvement*

CHIEF CLERK.

KATHERINE L. KEENE, Skowhegan.

CLERKS AND STENOGRAPHERS.

ANNE B. GOWER, Augusta.

BERNICE W. WHITE, Augusta.

LILLIAN D. MASSIE, Wilton.

MARY E. CLOUGH, Winthrop, to March 27, 1918.

MARION D. POPE, East Vassalboro.

ALICE M. MURPHY, Augusta.

ALMA S. BOARDMAN, Augusta, to April 4, 1918.

DOROTHY M. LIPPINCOTT, Augusta.

\* In the service from January 8, to December 1, 1918.

† Deceased.

‡ In service from May 18, 1918.



## ANNUAL REPORT OF THE COMMISSIONER OF AGRICULTURE.

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The winter of 1917 and 1918 was one of the severest on record, doing much damage to the fruit interests of the state. Weather conditions through the growing season were more nearly normal than they had been during the two preceding years, yet there were untimely frosts and frequent and heavy rains, causing much damage to crops in some localities, not a few farmers losing heavily. The labor shortage on the farms was the greatest ever known, due for the most part to the world war. Farmers realizing how great the drain of men from the farms would be, made their plans accordingly, and planted only what could be cared for by themselves and the small amount of help that could be secured. In spite of the big shortage in help, the planting of crops as a whole, was up to normal. While there was a decrease in some crops, the loss was offset by an increase in other crops. Farmers and their families made long days and kept steadily at work. Holidays and even Sundays found them busy, in many cases neglecting social and religious duties, for the time being, with the determination to do all possible in the production of food to help win the war. And now that the war is happily closed and the cause of Civil Liberty for the world is won, the farmers of Maine may well feel proud of their part in the glorious struggle. Not alone in heavy labor at home have they contributed, but in money and in men. Their policy has been to produce more food for the people of the state and more feed for their livestock. This was a wise policy, and one that should be continued through the years ahead.

### HAY.

The hay crop was somewhat smaller than the bumper crops of 1915 and 1917. The yield is estimated by the Federal Department to have been 1.15 tons per acre, which is the 10 year

average. The quality is about up to the usual grade. The total crop was 1,308,000 tons, while the crop for 1917 was 1,566,000 tons. Prices of hay for two years have ruled very low compared with prices of other feeds, and especially when the cost of production is considered.

Present prices are better. (December 24th)

#1 Timothy selling in Boston for \$34. to \$37.

#1 New England hay is quoted at \$30. to \$32.

To get the best price, hay should be fed to high bred and superior quality livestock.

#### POTATOES.

The planting of potatoes was 10 to 20 per cent less than in 1917. The yield was estimated at 200 bushels per acre, and the total crop at 24,250,000 bushels. This is a fair crop, but not up to the record, which exceeds 30,000,000. The average yield throughout the country was 94.8 bushels, which is less than one-half of the Maine yield. The 1917 crop was 20,000,000 bushels. With the high cost of fertilizer and labor the prices paid at the present time are not very remunerative, so it is claimed by many planters.

Maine stands fifth among the states in potatoes for 1918.

New York .....	32,646,000 bushels.
Minnesota .....	32,031,000 bushels.
Wisconsin .....	31,379,000 bushels.
Michigan .....	30,287,000 bushels.
Maine .....	24,246,000 bushels.

#### • CORN.

The yield of corn in Maine was forty-five bushels per acre, which is 3.4 bushels above the ten year average. The crop was 1,035,000 bushels as against 780,000 bushels in 1917. The average yield in the United States is placed at 24.2 bushels, a little more than one-half the Maine yield. The pack of sweet

corn was much larger than that of last year. The price paid to producers was five cents a pound, a considerable advance over previous years. While the yield was good and some planters reaped a rich harvest, many fields of corn were struck down by untimely frosts, entailing great loss upon the producers.

#### WHEAT.

The yield of wheat was twenty-five bushels per acre, which is a trifle above the average. The yield for the country as a whole was 16.1 bushels. Total Maine crop was estimated October 1st as 632,000 bushels, four times the crop of 1917. The quality is good. Owing to heavy rains a few planters lost their crops in the field. As the Government has fixed the minimum price for the 1919 crop at a figure which ought to make the raising of wheat profitable, it is believed there will be a larger planting next spring.

#### OATS.

The yield of oats was forty bushels per acre, a little above the average. The total crop was 7,760,000 bushels as against 4,930,000 bushels in 1917. The average yield in the country was 34.5 bushels.

#### BUCKWHEAT.

The yield of buckwheat was twenty-eight bushels per acre, above the average for ten years. The yield in the country was 17.6 bushels. The total crop was 454,000 bushels which was 40 per cent ahead of the 1917 crop.

#### BARLEY.

The barley crop yielded twenty-eight bushels per acre, being an average crop. This is about two bushels above the average for the country. The total crop was 232,000 bushels, which is 50 per cent more than in 1917.



## APPLES.

The apple crop was one of the lightest for years, due in a large measure to the intense cold of the winter. It was not over 30 per cent of a normal crop. The total crop of commercial apples was about 226,000 barrels, a little over one-half that of 1917. Owing to the same cause, the pear and plum crops were almost a total failure. The loss to the orchard industry in apple trees killed or badly injured, was very heavy. Baldwin trees were damaged the most of any variety. Authorities disagree on the loss. Answers to questionnaires sent out by the Department indicate a loss varying from one to twenty-five per cent, the average being about sixteen per cent.

## LIVESTOCK.

The number of cattle in the state as returned by local assessors shows a healthy increase, as follows:

	1916	1917	1918
Cows—4 yrs. old	137,656	141,135	149,905
Oxen	5,891	5,809	7,351
3 yr. olds	23,828	24,141	27,195
2 yr. olds	37,860	41,033	41,394
Yearlings	51,784	50,361	57,361
	<hr/>	<hr/>	<hr/>
Total Cattle	257,019	262,479	283,206
Gain over 1917	20,727		
Gain over 1916	26,187		

Several new herds of beef breeds have been established during the year. Maine has many meritorious herds of leading dairy breeds as well as beef breeds. The basis of successful agriculture in Maine must rest upon its livestock industry. "More meat, more dairy products, more poultry and eggs, more wool," should be the motto of Maine farmers.

## DAIRY INDUSTRY.

The number of cows in the state, four years old, was on April 1, 1917, 141,135 and on April 1, 1918, 149,905. The num-

bed of three year olds and two year olds in milk is not known exactly, but from the Assessors' figures, will estimate it to be 40,000. This makes the number of milch cows and heifers upwards of 180,000. The gain in the last two years is due partly to the large crops of hay in 1916 and 1917 and in part to the better prices received for milk and cream, as well as butter and cheese.

The New England Milk Producers' Association, with its 130 Locals in the state should be given a large share of the credit for securing better prices of dairy products. The Regional Milk Commission, acting under the War Food Administration as arbitrator, has helped greatly in raising and standardizing prices. Its work which comes to a close in a few months is surely highly appreciated by the milk producers of the state. In some way there ought to be created another tribunal to do work such as this Commission has so satisfactorily initiated and carried along. The Maine Dairymen's Association has gone on record in favor of a change of Section 3, Chapter 130 of the Revised Statutes, so as to permit what is known as standardization of milk. Steps have been taken which may lead to a uniform standard throughout all New England.

#### SHEEP.

From April 1, 1917 to April 1, 1918, sheep in the state made a gain of 6,776. Previous to 1916, the change in sheep population had been almost constantly downward. Owing to the extreme price of wool and mutton, there has grown up a greatly increased interest in this important industry. A meeting to arouse new interest in the state was held in Portland in the early part of the year. The convention was called and held under the auspices of the Portland Farmers' Club. The meeting was well attended and proved to be very helpful. As a result of the influence of the meeting, the appointment of a Sheep Specialist was authorized by Governor Milliken and his Council. Also, initiatory steps were taken for a public auction of sheep. Such a sale was arranged through the efforts of the Club and other Associations, and was held in connection with the Central Maine

Fair, and proved a great success. Mr. C. H. Crawford of Dexter was appointed Sheep Specialist. During the year he has been continuously engaged among the flocks of the state, showing the owners how to feed properly, what is proper care for sheep, and how to prevent or get rid of the diseases that are sorely affecting many of the sheep in the state. My opinion is that his work has been highly beneficial and I recommend that the appropriation for the Bureau of Animal Industry be large enough to continue this work.

#### POULTRY.

For two years the poultry industry has not been very satisfactory, but at present the outlook seems to be more promising. At the opening of the European War, poultry was kept in large numbers on a large percentage of the farms in the state. There were also many large plants each carrying many hundred birds and some, thousands. Not a few young men entered upon the industry as a life work. Modern houses were built and modern equipments purchased. The investment was large. Feed for poultry was bought mostly from other sections. After the opening of the war, the prices of feed went up by leaps and bounds. Difficulties were met in transportation. While the cost of producing eggs and meat mounted rapidly and to unheard of heights, the selling price of eggs and meat did not follow as rapidly. As a consequence of that condition, large numbers were hurried upon the markets in a wholesale way, so that for a long time, the price was kept down to a point that did not compare with the cost of feed and labor. After thousands and thousands of birds had been sacrificed, the market began to gain in price, until today the price of poultry products compares favorably with the cost of production. No doubt the tide of production has turned, and the industry will soon be back to pre-war conditions. We recommend that poultrymen should consider very carefully the proposition of raising more of their own feed so as to be less dependent upon the West.

#### SEED CERTIFICATION.

In the year 1913 this Department, in co-operation with the Maine Seed Improvement Association, began a system of seed

inspection in the field and in the bin, furnishing a blue tag certificate to be attached to each container of seed, bearing the endorsement of the Department, and of the Association, each container being sealed at the time when tag was attached. This work was carried along for four years by the Assistant Dairy Inspector. The Legislature of 1917 placed upon the statute book, a law providing for such inspection, and made an appropriation for administration, the work in the field to be paid for by fees. The area entered for the blue tag this year showed an increase of about 60 per cent over that of last year. War conditions have affected this work considerably. At the present time it looks as if there might be a largely increased acreage in 1919.

#### FAIRS.

A few Agricultural Fair Associations failed to hold their annual exhibition on account of the Spanish Influenza. Several others met extremely heavy rains, which entailed on them considerable financial losses. The exhibits at most Fairs were of an unusually high order, including both livestock and hall exhibits. Less prominence was given to cheap shows and games. Attention was centered more upon fine stock and worthy agricultural products. The fair associations at Lewiston, Waterville, and Bangor, as well as the local associations are to be highly commended for the unusual efforts put forth to give to the public, exhibitions truly representative of the agriculture of the state. They should receive from the state every encouragement possible to continue along this line. The Maine State Pomological Society, the New England Fruit Show, the Maine Dairymen's Association, the Maine Seed Improvement Association, the Maine Livestock Breeders' Association, and the Boys' and Girls' Clubs of the state, held a joint meeting and exhibition in the City Hall, Portland, during the week of November 18-23. The purpose of making the meeting a joint one, was to save in overhead charges, and to give farmers a chance to see all the exhibits with the loss of only a few days time, and at a large saving in traveling expenses. The joint exhibition proved a great success. The exhibits were large and fine. This far excelled anything of the kind ever made in Maine before. Many fine addresses were delivered in the assembly room which was open to the public. The

business meetings were lively and full of interest. The Sheep Breeders' Association gave a banquet which proved of especial interest to sheep men. The Portland Farmers' Club gave a banquet on Friday evening to the members of the six associations with several invited guests, among whom were many of the New England Commissioners of Agriculture and New England Entomologists. There were several hundred guests at the banquet. Hon. David F. Houston, Federal Secretary of Agriculture, gave a very interesting and instructive address. Col. F. N. Dow, President of the Club, presided in his usual happy manner. Senator Frederick Hale was present and spoke briefly but interestingly on some agricultural needs.

#### INSTITUTES.

A two days' orchard meeting was held in the spring in the City of Auburn. The program provided many speakers, both from this state and from other states, who were experts in their line of work. The meeting was well attended and highly successful. Special institutes have been held in various sections, each one being devoted to the consideration of only one topic. Speakers have been furnished granges where special agricultural subjects were discussed. The members of the Department have addressed several hundred meetings held in connection with granges and other associations. As a rule such meetings have not been so largely attended as in former years. This fact is not due to any apparent lack of interest, but to the great shortage of labor.

#### PESTS.

The Brown-tail Moth has almost entirely disappeared. No doubt it will return again after a few years. The Gypsy Moth is found in about 200 towns, in most of these, in small numbers. When once established in a community they spread very rapidly. Municipal officers and orchardists should be on constant guard and when they find the insect, should at once notify the Department, which so far as possible, will aid in its suppression. The San Jose scale has been found in a few orchards, but in every case, steps have been promptly taken to exterminate it.

The latest dangerous pest to appear is the European Corn Borer. This was discovered around Boston in 1917 and covers an area of about 135 square miles. Steps were promptly taken by the Department of Agriculture in Massachusetts for its suppression. The Federal Department of Agriculture placed a quarantine on the infested area. At a meeting in Portland of the New England Commissioners of Agriculture and Entomologists, it was voted that Congress should be asked for an appropriation, not merely to suppress it, but to eradicate it before it spreads into larger territory. Again we urgently recommend the practice of spraying by all farmers having orchards, or who raise potatoes or other crops, subject to great loss from insect pests and fungus diseases.

#### MARKETING.

There are in the state at this time about 122 Farmers' Unions, 26 Fruit Growers' Associations, and 130 Milk Associations. These are all business organizations designed to aid the farmers financially. Most of these associations are active. There is great need of supervision and instruction to show them proper business methods, how to keep proper financial records of their doings and to inculcate a spirit of loyalty. The Bureau of Markets, only lately established, is doing all it can for these associations. The Chief of the Bureau has many other lines of work to take his time. He needs some assistance and I recommend an increase in his appropriation for that purpose.

#### MEN IN THE SERVICE.

Twenty men from this Department entered the service. Brooks Brown, State Dairy Inspector, enlisted. He was discharged and has since returned to his work in the Department. E. L. Newdick, Chief, Bureau of Seed Improvement, is still in the service. Clarence O. Brown in the Bureau of Food Inspection and seventeen men engaged in the Gypsy Moth work, entered the service. Sixteen of these went to France and fifteen were upon the firing line.

## MR. EATON.

Mr. S. H. Eaton of Oxford entered the Department as Assistant Horticulturist in July 1916. On December 6th, 1918, he was in the town of Kenduskeag, where he delivered an address before Mystic Tie Grange. He returned to Augusta that evening and went to his room. Almost immediately he expired. Mr. Eaton was a man in all his relations with other people. He was uniformly courteous, always tactful, always loyal, and was never found disparaging others. He was well fitted for the work he had to do and will be much missed.

## PUBLICATIONS.

Quarterly bulletins have been published by the Dairy Department.

A bulletin on Potato Culture in Maine, by E. L. Newdick, Chief, Bureau of Seed Improvement; a bulletin containing Papers and Addresses delivered at various Association meetings; a bulletin on Small Fruits, and Lectures delivered at Auburn Conference by F. H. Dudley, Chief, Bureau of Horticulture; a bulletin on Bee Culture in Maine, by O. B. Griffin of Caribou; a circular on Home Gardens, by Dr. G. M. Twitchell of Auburn; Forty Reasons Why Sheep Should be Kept in Maine, by W. B. Kendall of Bowdoinham; a circular on Easy Methods of Testing Seed, by E. L. Newdick; circular on Variations in Test, found by work conducted by the Maine Department of Agriculture, by H. M. Tucker, Chief, Bureau Animal Industry; a circular on a Brief Outline of the Work of the Bureau of Markets; by F. S. Adams, Chief; Report of Second Carleton Orchard Contest, third year, 1917, by F. H. Dudley, State Horticulturist; the Sixteenth Annual Report of the Commissioner of Agriculture; and leaflets on the European Corn Borer, the Woolly Bear, the Corn-ear Worm, and the Common Corn-stock Borer, by F. H. Dudley.

## VACANT FARMS.

On this subject I may well present a "brief" which I prepared for the hearing at Washington before Secretary Lane of

the Interior Department, based on my belief, which seems to be entertained by most of our citizens, that the true economic policy is to provide for the reoccupancy of vacant farms before any attempt is made to create new farms in any great number.

## DEPARTMENT OF AGRICULTURE

State of Maine

Augusta, December 14, 1918.

### BRIEF.

In Maine there are for sale 1,000 farms with good buildings, (as a rule, painted) land strong and fertile, ready for the plow; also 1,000 more farms with buildings not quite so good, and tillage land somewhat run down. Prices are very reasonable indeed. These farms have been vacated through economic conditions, brought about in a large part by the war, but in some part by labor conditions previous to the war. They are well located in good communities, which contain school-houses, churches, grange halls, and have free rural mail delivery, telephones, and other modern conveniences. They are ready and waiting for occupancy. They can be taken over without any delay whatever.

Maine is well fitted for producing large crops of potatoes, apples, small fruits, vegetables, corn, oats, wheat, and other grains and hay, and in fact any crop that may be produced in a temperate climate, and its yield equals or exceeds that of most other states. In the matter of potatoes, Maine far surpasses all other states in yield per acre. The potato yield runs from twenty to thirty million bushels annually and their quality is unsurpassed. Maine raises the finest apples known, and they are of the highest keeping quality. Her annual crop will average about five million bushels. The apple belt is of sufficient area to produce many millions of barrels of apples when fully developed.

Factories for canning sweet corn are numerous and well distributed throughout the corn belt. The annual output is many million cases. Animal Husbandry is of leading importance throughout the whole state; hay well adapted for feeding, including clover and millets; corn and other crops for the silos,



of which there are very many; silage crops and the ability to produce most kinds of grains, make the production of milk, cream, butter, and cheese, meats of various kinds, chickens and eggs, a very interesting proposition and one of profit. The annual output in milk is nearly eight hundred million pounds. Other products are of large quantity with plenty of opportunity for increase. Her livestock is of high quality, including representatives of the best breeds of dairy cattle, sheep and swine.

Maine has 2,000 lakes, well distributed, of unsurpassed beauty; 1500 streams of varying size, threads of beauty winding their way from the high lands to the sea. Maine's water power, with few exceptions, far exceeds that of other states. Her forests cover many thousand square miles.

Maine's farm population is well organized. There are 50,000 Patrons of Husbandry, with granges in nearly every town, owning 450 fine grange halls. There are 125 business associations known as Farmers' Unions, 25 Fruit Growers' Exchanges, and about 130 Milk Producers' Associations. We have a State Dairymen's Association, a Pomological Association, Seed Improvement Association, and Breeders' Association. There are also many local associations. Boys and girls are well organized throughout the state in clubs, under the careful management of the College of Agriculture, which is one of the best in the country.

Maine's system of schools ranks among the best. It affords opportunity for every child to obtain such education as he may desire. Maine is located close to the best market in the world. Water for man and beast is unequalled anywhere. Her scenery is of the best. She is not bothered with strikes, lockouts, or boycotts. Her only labor trouble lies in a deficiency. She needs more men and women to develop her great resources which are not fully understood by the rest of the country. Her location in the northeast corner of the country is an obstacle to her development. On that account and for other reasons, she should receive the careful consideration of the Central Government at Washington.

We desire in the first place to have these vacant farms mentioned above reoccupied, then may come the building up of new farms and new homes, and there is abundant opportunity for this in our state. Maine, in years gone by, has helped build up

many other states in the country by sending them thousands of her strong men and women. She has done her share and more perhaps, in the development of our great nation. She now asks that there may be allowed her a fair share of whatever favors the Government has to give.

#### CONCLUSION.

In submitting this report, purposely made brief, I wish to thank Your Excellency, Governor Milliken and his Council, for the courteous treatment and timely suggestions. Also, I feel it my duty to say that the College of Agriculture, the Agricultural Experiment Station, the State Grange, and all other farm organizations throughout the state have always been ready to co-operate with this Department in futhering the Agricultural interests of the state. I thank them all.

JOHN A. ROBERTS,  
*Commissioner.*

## REPORT OF CHIEF OF BUREAU OF SEED IMPROVEMENT.

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*To Hon. John A. Roberts, Commissioner of Agriculture:*

I herewith submit my report of the Bureau of Seed Improvement for the year 1918.

The work of this Bureau prior to May 15th was efficiently carried on by E. L. Newdick. At that time Mr. Newdick entered the Officers's Training School of the United States Army and has since successfully passed his examinations for a commission as Lieutenant.

Scarcity of labor and fertilizer, with high prices for both, have added to the already difficult problems of the Maine farmers. However, true to the American spirit of using difficulties as opportunities to test ability, they have closed the season of 1918 with a wheat production more than trebled, potatoes increased 3,650,000 bushels, corn 500,000 bushels and an oat crop nearly double that of 1917.

The importance of the work of this Bureau in assisting efficient crop production by searching out high-yielding strains of seed, free from disease, is rapidly being recognized by progressive farmers. The acreage inspected this year amounted to 537 acres of potatoes and 18 of oats, being 58 per cent more than in 1917. From July 22nd to September 9th, four inspectors were constantly employed in Aroostook county and, as a result, 263½ acres of potatoes have passed the field requirements for blue tag seed stock. In central Maine, 89 acres of potatoes and 11 of grain have been passed according to the same requirements.

The work is now better systematized than ever before in the line of potato seed stock. That equally satisfactory results can be obtained with other staple food crops is evident. Practical requirements for high grade seed corn and beans have been drawn up by this Bureau with the approval of the Executive

Committee of the Maine Seed Improvement Association and, with a limited amount of strictly high grade seed, it is planned to begin the production of the blue tag grade of corn, beans and wheat seed during the summer of 1919 along the lines of field and sack inspection similar to that now used in the potato and oat work.

While most farmers realize the value of improved seed, it is nevertheless true that many do not care to use sufficient care to produce a high grade. One farmer made the plain statement that were he sure of obtaining a first class grade of seed stock for his general farm crops that he would prefer paying a premium of fifty cents per bushel rather than bother to keep up his own strains by the annual selection which is necessary. This attitude of letting the other fellow do it adds emphasis to the need of getting still more growers engaged in the production of certified seeds of all kinds. Surely the demand ought to be met. The per acre yield for Maine of oats and potatoes in 1917 was 29 and 135 bushels respectively, while certified fields averaged 261½ bushels for potatoes and upwards of 50 bushels for oats this year. To spread the use of these high yielding seeds with suitable systems of cultivation means a great financial benefit to the state with her 23,000 acres of corn, 23,000 of wheat 194,000 of oats and 112,000 of potatoes.

In carrying on the field work during the summer, I was fortunate in securing competent men as assistants who were conscientious in their work. C. A. Stetson of Caribou and C. M. Leavitt of Augusta were especially well fitted because of actual farm experience. Guy C. Porter of Houlton has had charge of the work in Aroostook county as Assistant Chief of the Bureau. Mr. Porter is also President of the Maine Seed Improvement Association with whom we co-operate in certifying seed. In fact the amount of field work done the past summer was made possible only through the financial plan adopted by this Association. The actual cost of the extra assistants employed during the summer was \$1399.64. Of this amount only \$786.12 was taken from the appropriation for this Bureau. The remainder was provided from the treasury of the Seed Improvement Association. These funds are limited and a further extension of the work of seed improvement will need more financial help in 1919.

During the year I have attended over forty public meetings

at which the average attendance has been 51. In speaking on these occasions the intention has always been to use subjects relating to practical farm problems.

In closing, I wish to express my appreciation of your courtesy and advice which has been a great help in the policy and work of the Bureau of Seed Improvement. The members of the Department and the clerical force have rendered valuable assistance at all times.

Respectfully submitted,

C. M. WHITE,  
*Chief, Bureau of Seed Improvement.*

REPORT OF STATE HORTICULTURIST.  

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*To Hon. John A. Roberts, Commissioner of Agriculture:*

The severe weather of the winter of 1917-18 so affected the apple trees that only about twenty-five per cent of a crop was realized. The pears, plums and cherries suffered to a certain extent, some dying entirely, others having buds injured so that practically no fruit set.

In a few sections, it is a sorrowful sight to observe the damage done to Baldwin orchards due to winter-killing. Twelve years ago this winter, damage occurred from this same cause, though in a much less degree. At this time, it is hard to estimate the loss to the state.

I have visited many orchards in Franklin, Kennebec, Cumberland and Androscoggin Counties and should judge the loss in Franklin County alone to be at least \$300,000. One prominent orchardist of that county estimates his loss at \$10,000.

I find that the trees were winter-killed in varying locations and under widely different conditions. The exposure, whether north, south, east or west, apparently made no difference, as the damage is found to be as severe on trees having an easterly exposure as those having a northerly or westerly. It was thought by some that the trees which bore heavily last year were more susceptible, but it has been found that the damage is as severe on trees that bore lightly, and made good growth. Trees set in sod and which have made small growth apparently suffered as much as those that were under a good state of cultivation.

In order that this disaster may not be repeated, as it is liable to be in any severe winter, it has been thought wise to suggest the planting of some variety of apple to take the place of the Baldwin in this state. It is desirable to find a variety which shall possess the good coloring of the Baldwin, also its size and fine quality. This must be a good keeping variety, and lastly,

it should be a variety which may be depended upon to withstand the Maine climate.

Under these conditions it becomes necessary to suggest to the orchardist some one variety filling these requirements, instead of leaving him to purchase a mixed assortment which might be recommended to him by different parties, and which, owing to the many varieties, might not be as salable. To this end, I called a meeting of the orchardists of this state at Auburn, on Friday, June 21, at the conclusion of the business meeting of the Maine Fruit Growers' Exchange. The topic was fully discussed and a committee of five, consisting of Frank H. Dudley, State Horticulturist; Dr. G. M. Twitchell, Monmouth; Wilson H. Conant, President of Maine Fruit Growers' Exchange; Charles C. Clements, President of Maine Pomological Society and W. L. Bonney, President of Cathance Fruit Growers' Association were appointed to recommend a variety or varieties to take the place of the Baldwin. After further discussion at the Annual Meeting of the Maine Pomological Society at Portland, the committee made the following report:

"In localities where the Baldwin was not winter-killed, the planting of this variety be continued.

In sections where it is advisable to discontinue the planting of the Baldwin, it is suggested that the Tolman Sweet, Artic, Pewaukee, Fallawater, or natural fruit be planted. These are sturdy varieties on to which grafting can be done, but they should be left ungrafted until a few more winters have demonstrated whether or not the Baldwin is going to continue to be winter-killed.

The McIntosh Red was strongly recommended for local markets but not as a commercial variety, as it does not stand shipping well.

In all sections where any standard variety of high color and good quality withstands the severity of our winters, we urge its increase."

#### MARKETING OF FRUIT.

To assist the orchardist in disposing of the product of the orchard, I have organized two more fruit growers' associations and reorganized a third, during the past year.

It has been considered that Maine apples are the best apples for the foreign markets, as they stand shipment better than apples from other sections of the country, therefore the orchardists of this state should organize, and be in readiness to supply the foreign market. For many years the markets of Europe must look to America almost entirely for their apples. The trees of fair France, blasted by shrapnel and hacked down by the Huns, now lie in ruin. The orchards of Italy have suffered the same fate. Russia has, through its demoralization, eliminated itself from competition in this line.

I have prepared blanks to be filled out by a number of orchardists in order to get at the cost of production of apples, the value of the orchard being estimated, and an itemized account being kept of materials bought for the orchard; also the amount received for the product. It is planned to continue this for a term of years in order that the Department may possess definite information.

Believing that much good might result from personal calls among the orchardists, I have made a point of seeing as many of them as it was possible to visit, considering the large amount of other work to be done. In this work I have received a most cordial welcome and have been urged to call again. I feel sure that the personal suggestions made and advice given in these orchards will prove of much benefit.

I have lectured before thirty-two grange and orchard meetings, and attended ten other meetings during the year.

The late S. H. Eaton, Assistant Horticulturist, lectured during the year eight times and inspected twenty-five orchards and nurseries, besides making about twenty calls on private estates in the southern part of the state.

*San Jose Scale.* I have visited all places formerly infested with San Jose scale, and I find that the trees affected have either been cut and burned, or so thoroughly sprayed that this pest is largely under control. I know of only three bad infestations in the entire state, and plans have been made to eradicate these. No new infestations have come to my knowledge the past year.

*Cherry-Tree Ugly.* The ugly appearing nests, which have been so numerous on trees along the roadsides, and which resemble the nests of the Tent Caterpillar, have, at my request,



been cleared up in many towns throughout the state. This pest was thoroughly described in last year's report.

Careful attention has also been given to the extermination of the many other insects and diseases pertaining to plant life.

The usual work of nursery inspection was attended to and in several instances raspberries were condemned on account of Crown Gall, a diseased condition of the roots. All nurseries where currants and gooseberries are growing were carefully inspected for spores of the White Pine Blister Rust. The following cities and towns were added to the list of infested places,—Auburn, Bath, Hallowell, Bar Harbor, Mechanic Falls, Monmouth and North Raymond.

*White Pine Blister Rust Quarantine.* On account of the White Pine Blister Rust, a total quarantine has been declared on all currants and gooseberries entering this state or being moved from one point to another within the state.

*Orchard Pollenization.* The Ben Davis, being a self-sterile variety, requires some other variety like the McIntosh Red to pollenize it. Some of the varieties which are more or less self-sterile are the Yellow Bellflower, Roxbury Russet, Tolman Sweet, Gravenstein, King, Northern Spy and Red Astrachan. Growers of these varieties will see that they must be pollenated in some manner. Certainly the bee is the cheapest agency for pollenization of the orchard, not asking, but giving returns for its labor.

It has been demonstrated that insects of some kind are almost imperative if the orchard is to be perfectly pollenized. Wild bees and some other insects are more or less useful in the orchard if they are abundant in the community. The most successful way for the proper disposal of pollen is to keep a stand or several stands of bees in the district. It is conservative to state that the value of the honey-bee in cross-fertilization of the blossoms in the orchard is greater than the value of the honey production. Not only do many varieties of apples require this cross-fertilization before they will set fruit, but other plants such as clover and buckwheat also demand it.

Bees, then should be found in every orchard community. They become an economical insurance to cross-fertilization. An experiment in pollenization gave the following figures;—where the blossoms were covered, 32 bore apples, while of those pollenated 399 bore apples. The following figures were given concern-

# SPRAY CALENDAR

for Apple Trees



1

## DORMANT SPRAY

### *When to Spray:*

Any time after leaves drop in the fall until buds burst in the spring. (When it is at least 10 degrees above freezing.)

### *What to Spray With:*

Lime-sulphur solution, 1 to 10 and miscible oil such as Scalecide may be used alternate years. Arsenate of Lead 2 to 3 lbs. to 35 gallons of water.

### *What to Spray For:*

Oyster Shell Scale.

San Jose Scale.

Blister Mite { If prevalent, spray  
                  } after buds burst.

Scab.

Aphis, if a miscible oil is used.



2

## BUD SPRAY

### *When to Spray:*

When buds commence to open and grow pink is just the right time.

### *What to Spray With:*

Arsenate of lead, 2 to 3 lbs. and lime-sulphur solution, 1 to 35 gallons. (For Aphis, 1-3 pint of "Black Leaf 40".)

### *What to Spray For:*

Apple Scab.

Black spot.

Canker-worms.

Bud-moths.

Blister Mite.

Aphis or tree lice.

(Cuts used by courtesy of the Department of Agriculture, Dominion of Canada.)



3

### CALYX SPRAY

*When to Spray:*

Just after the blossoms have fallen. Never when in bloom, as it would kill the farmer's friend, the bee.

*What to Spray With:*

Arsenate of lead, 2 to 3 lbs. and lime-sulphur solution, 1 to 40 gallons. (For Aphis, 5-12 pint of "Black Leaf 40")

*What to Spray For:*

- Lesser Apple Worm.
- Codling-moth.
- Apple Scab.
- Black spot.
- Aphis.
- Apple Cuculio.
- Plum-Cuculio on Apple.

(Get Baume specific gravity or dilution of lime-sulphur solution from your dealer.)

*Do not spray in wet weather* as it may cause burning of foliage and fruit. If powdered Arsenate of Lead is used only 1-2 the above amount is required.

For Cuculio on Apple also spray as for calyx spray, two weeks later,



4

### FRUIT AND FOLIAGE SPRAY

*When to Spray:*

Should be applied three or four weeks later than the Calyx Spray, especially if it has been wet the first part of June.

*What to Spray With:*

Arsenate of lead, 2 to 3 lbs., lime-sulphur solution 1 to 40 gallons.

*What to Spray for:*

- Lesser Apple Worm.
- Apple Scab.
- Late brood of Codling-moth.

ing an orchard; before bees were kept this orchard bore 600 barrels per year. After bees were placed in the orchard, the same trees bore 1,800 barrels of apples per year.

*Bulletins.* On account of the importance of the apple industry in Maine, information concerning apple insects and diseases has been given special attention. Four bulletins have been issued. Three of these contain a spray calendar, a copy of which is contained in this report. The following bulletins have been issued and are available for free distribution:—

The Apple, Tree and Fruit.

A Few of the Insect Pests and Fungous Diseases of the State of Maine.

Crown Gall and Hairy Root.

Small Fruits, and Lectures Delivered at Auburn Conference.

The last named gives a full report of an evening discussion on Dusting as a Substitute for Liquid Spray in the Orchard, also lectures on Orchard Renovation, Transplanting of Trees by Use of Dynamite, Modern Methods of Growing Apples, Handling and Storage of Apples, and instruction in regard to small fruit culture.

If any of the above named publications are desired, or if any party wishes his or her name placed on our mailing list, they should make application to this Department. If diseased specimens and insects are to be identified, they should be sent to the State Horticulturist.

Some of the insects that have been brought to the Department for identification during the past year, are as follows,

Corn-Stalk Borer	<i>Pyrauster nubilalis</i>
Blister Beetle	<i>Macobasis unicolor</i>
Ctenucha Virginica	
Sugar Maple Borer	<i>Plagionotus speciosus</i>
Le Costes Sawfly	<i>Lophyrus lecontei</i>
Oyster Shell Scale	
Scurfy Scale	

The diseased specimens sent in were as follows,—

- Hairy Root on apple tree roots
- Nematode Galls on apple tree roots

## I

BARRELS OF APPLES SHIPPED FROM SEPT. 1, 1917, TO  
AUGUST 1, 1918.

		Barrels Transferred to M. C. R.R.
Maine Central Railroad,	340,550	
Grand Trunk Ry.,	46,802	
Eastern Steamship Co.,	27,192	
Boston & Maine R. R.,	21,781	
Bangor & Aroostook R. R.,	18,262	9,541
Wiscasset, Waterville & Farmington Ry.,	15,000	15,000
Bangor Railway & Electric Co.,	9,341	9,341
Georges Valley R. R.,	9,169	9,169
Bridgton & Saco River R. R.,	5,138	5,138
Sandy River & Rangeley Lakes R. R.,	4,750	4,750
	<hr/>	<hr/>
	497,985	52,939
Total transferred,	52,939	
	<hr/>	
Actual shipments,	445,046	

## II

BARRELS OF APPLES SHIPPED FROM LARGEST SHIPPING POINTS  
FROM SEPTEMBER 1, 1917, TO AUGUST 1, 1918.

	Barrels
West Farmington	22,073
South Paris	15,750
Auburn	12,662
Monmouth	12,140
North Jay	12,025
Wilton	11,396
East Hebron	11,089
West Paris	10,800
Winthrop	10,750
Buckfield	10,189
Norway	9,725
Greene	8,440

Skowhegan	6,566
Hartford	5,898
Winterport	5,318

The shipments of nursery stock into the state for the season 1918 have been small. This is undoubtedly due to the war and some discouragement on account of the winter-killing during the past winter.

Report blanks were sent as usual to the different people receiving shipments of nursery stock with the request that they fill in the variety and amount of stock purchased. From the reports returned we can give the following list of stock:

Apple trees	3,449
Pear trees	399
Plum trees	385
Cherry trees	201
Peach trees	85
Quince trees	11
Raspberry plants	4,987
Blackberry plants	1,270
Strawberry plants	1,444
Currant bushes	168
Gooseberry bushes	197
Shrubs	1,846
Ornamentals	1,089

NURSERY COMPANIES THAT HAVE DELIVERED ORDERS IN THE STATE OF MAINE DURING THE YEAR 1919.

Name.	Address.	No. of Shipments	
		Spring	Fall
1 Aiken, G. D. ....	Putney, Vt. ....	1	
2 Allen, W. F. ....	Salisbury, Md. ....	1	
3 American Forestry Co. ....	Framingham, Mass. ..		1
4 Baldwin, O. A. D. ....	Bridgham, Mich. ....	2	
5 Barnes Brothers Nursery Co. ....	Yalesville, Conn. ....	1	
6 Bay State Nursery Co. ....	North Abington, Mass. 8		2
7 Breck-Robinson Nursery Co. ..	Lexington, Mass. ....	11	

8	Breck, Joseph & Sons	Boston, Mass.	1	
9	Brown Bros. Co.	Rochester, N. Y.	3	
10	Brown Nursery Co., F. W.	Rose Hill, N. Y.	1	
11	Bryant Bros.	Dansville, N. Y.	1	
12	Burr, C. R. & Co.	Manchester, Conn.	11	
13	Central New York Nurseries	Geneva, N. Y.	8	
14	Charlton, John & Sons	Rochester, N. Y.	5	1
15	Chase Brothers Co.	Rochester, N. Y.	43	
16	Chase Nurseries	Geneva, N. Y.	1	
17	Chase, Homer N.	Geneva, N. Y.	8	1
18	Cobb, W. F.	Franklin, Mass.	15	
19	Connecticut Agricultural Experiment Station	New Haven, Conn.	1	
20	Conrad-Jones Co.	West Grove, Pa.	2	
21	Dreer, Henry A.	Philadelphia, Pa.	4	
22	Elizabeth Nursery Co.	Elizabeth, N. J.	1	
23	Elliott Nursery Co.	Pittsburg, Pa.	2	
24	Ellwanger & Barry	Rochester, N. Y.	4	
25	Empire State Nursery Co.	Waterloo, N. Y.	2	
26	Farmer, L. J.	Pulaski, N. Y.	2	
27	Farmers' Nursery	Rochester, N. Y.	1	
28	Farquhar, R. & J.	Boston, Mass.	15	
29	First National Nurseries	Rochester, N. Y.	9	3
30	Fish, Charles R.	Worcester, Mass.	5	
31	Fottler, Fiske & Rawson Co.	Boston, Mass.	8	
32	Framingham Nurseries	Framingham, Mass.	8	
33	Galloway Bros. & Co.	Waterloo, Iowa	1	
34	Gardner Nurseries	Osage, Iowa	5	
35	Gates, W. A.	Needham, Mass.	1	
36	Glenn Bros.	Rochester, N. Y.	2	
37	Graves & Co.	Brighton, N. Y.	1	
38	Guaranty Nursery Co.	Rochester, N. Y.	2	
39	Green's Nursery Co.	Rochester, N. Y.	96	2
40	Gurney, H. H.	Geneva, N. Y.	8	
41	Hall Co., L. W.	Rochester, N. Y.	1	
42	Hancock County Nurseries	Surry, Maine	1	
43	Harman Nursery Co., M. H.	Geneva, N. Y.	6	
44	Harris Nursery Co.	Rochester, N. Y.	1	
45	Harrison Nursery Co.	Berlin, Md.	1	1
46	Heath & Co.	Manchester, Conn.	3	
47	Horsford, F. H.	Charlotte, Vt.	1	1
48	Horticultural Nurseries	Dansville, N. Y.	3	
49	Houston's Nurseries	Mansfield, Conn.	1	
50	Howe-Campbell Nursery Co.	Geneva, N. Y.	1	
51	Hussey, J. C.	Oakland, Maine	1	
52	Jackson & Perkins Co.	Newark, N. Y.	1	
53	Jordan, Marsh Co.	Boston, Mass.	2	

54	Kellogg, R. M. ....	Three Rivers, Mich. . .	4	
55	Kelly Bros. ....	Dansville, N. Y. ....	25	
56	Kelsey, Harlan P. ....	Boxford, Mass. ....	3	
57	Kempton, Clifford & Sons ....	Springfield, Mass. ....	1	
58	Kings Bros. Nurseries ....	Dansville, N. Y. ....	5	
59	Knight & Bostwick ....	Newark, N. Y. ....	1	
60	Kurz, George ....	Chicago, Ill. ....	1	
61	LaPointe Nursery Co. ....	Geneva, N. Y. ....	1	
62	Little Tree Farms ....	Framingham, Mass. . .	2	
63	McCarthy Co., N. F. ....	Boston, Mass. ....	1	
64	Maloney Brothers & Wells Co. .	Dansville, N. Y. ....	32	3
65	Maule, William Henry ....	Philadelphia, Pa. ....	1	
66	Meehan, Thomas B. ....	Dresher, Pa. ....	1	
67	Mills Co., F. B. ....	Rose Hill, N. Y. ....	2	
68	Morse, Fred H. ....	Freeport, Maine ....	1	
69	Murphy, T. J. ....	Chicopee, Mass. ....	1	
70	New England Nurseries ....	Bedford, Mass. ....	11	
71	Oakland Nurseries ....	Manchester, Conn. ...	2	
72	Perry Nursery Co. ....	Rochester, N. Y. ....	1	
73	Pierson, A. N. ....	Cromwell, Conn. ....	1	
74	Pomona Ten Cent Nurseries ..	Dansville, N. Y. ....	10	
75	Pratt, C. S. ....	Athol, Mass. ....	1	
76	Reilly, John ....	Dansville, N. Y. ....	4	
77	Reilly Nurseries, Wm. J. ....	Dansville, N. Y. ....	3	
78	Rice, T. W. ....	Geneva, N. Y. ....	1	
79	Roesch, Lewis ....	Fredonia, N. Y. ....	1	
80	Rowan Nurseries ....	Dansville, N. Y. ....	5	
81	Rupert, W. P. & Sons ....	Seneca, N. Y. ....	10	
82	Schmidt & Batty Co. ....	Springfield, Ohio ....	1	
83	Sherwood, Elmer ....	Odessa, N. Y. ....	1	
84	Smith Co., W. & T. ....	Geneva, N. Y. ....	9	2
85	Sonderregger, Carl ....	Beatrice, Nebr. ....	1	
86	Spinney, Frank W. ....	Haverhill, Mass. ....	1	
87	Stark Bros. ....	Louisiana, Mo. ....	11	
88	Stark Nursery, Wm. P. ....	Neosha, Mo. ....	7	
89	Storrs, Harrison Co. ....	Painesville, Ohio ....	1	
90	Stuart, C. W. & Co. ....	Newark, N. Y. ....	15	
91	Sweet Nursery Co., G. A. ....	Dansville, N. Y. ....	2	
92	Thurlow's Sons, T. C. ....	West Newbury, Mass. .	2	
93	Vaughan's ....	Western Springs, Ill. .	1	
94	Vick's Sons, Jas. ....	Rochester, N. Y. ....	7	1
95	Wells Wholesale Nurseries ...	Dansville, N. Y. ....	2	
96	Western New York Nurseries ..	Rochester, N. Y. ....	3	
97	West Side Nurseries ....	Worcester, Mass. ....	48	7
98	White, R. H. & Co. ....	Boston, Mass. ....	1	
99	Wragg Nursery Co. ....	Des Moines, Iowa ....	1	
100	Wood, Allen L. ....	Rochester, N. Y. ....	8	
101	Wyman Nurseries ....	Rochester, N. Y. ....	6	



NURSERIES THAT HAVE HAD STATE INSPECTION FOR THE YEAR 1918.

NAME.	LOCATION.	ACREAGE.	
Adams, Charles E.	Bangor	2 acres	5,000 Evergreens
Allen, Mrs. Thomas	Bangor	1/20 acre	500 Perennials 100 Shrubs 15 Evergreens
Austin, Peter	Auburn	1 acre	Strawberries 6,500 Raspberries
Bearce, S. H.	Auburn	1/2 acre	3,900 Raspberries Strawberries
Bradstreet, L. W.	Hallowell	1/10 acre	Strawberries
Breck-Robinson Nursery Co.	West Mt. Vernon	2 acres	50,000 Berberis Thunbergii Rosa Rogosa
Bridges, G. B.	West Hancock	1/5 acre	2,500 Strawberries
Chaput, J. P.	Auburn	6/10 acre	7,800 Raspberries
Chase, Homer N. & Co.	Buckfield	3 acres	6,000 Apple 50 Pear 1,000 Raspberries
Churchill, E. P.	Mechanic Falls	1/10 acre	Strawberries
Coffin, Jesse	Brunswick	3/4 acre	3,000 Evergreens
Coleman, George E.	Readfield Depot	3/8 acre	Strawberries 1,625 Raspberries
Conant, W. H.	Buckfield	1/2 acre	6,500 Raspberries
Craig, R. J.	Woodfords	1 acre	Strawberries 6,500 Raspberries
Davenport, E. M.	Hebron	1/8 acre	1,000 Raspberries
Douglass, Benj. B.	Bowdoinham	1/2 acre	20,000 Strawberries

Dudley, Frank H.	Auburn	1/5 acre	100 Shade trees 50 Roses 75 Perennials 60 Shrubs 20 Evergreens
Eastman, A. A.	Dexter	1/10 acre	1,000 Raspberries
Eaton, S. H.	Oxford	1/16 acre	1,000 Golden Glow 100 Shrubs
Estes, Charles S.	New Gloucester	1/8 acre	Strawberries
Eveleth, Robert H.	New Gloucester	1/4 acre	1,625 Raspberries Strawberries
Fernald, W. Linwood	Eliot	4 acres	200,000 Herbaceous perennials 5,000 Shrubs 500 Roses 500 Vines 300 Roses
Foster, William	York Village		16,250 Raspberries
Furbush, E. W.	Greene		Blackberries Strawberries
Elmwood Farm	Augusta	4 acres	Pears Plums Cherries Roses Ornamentals
Goddard, L. C.	Portland	1/10 acre	25 Azalias 500 Perennials 150 Shrubs 50 California Bamboo 16 Shade trees

NAME.	LOCATION.	ACREAGE.	
Hancock County Nursery	Surry	½ acre	400 Apple
			2,000 Raspberries
			4,000 Strawberries
			125 Shrubs
Hodgdon, Fred	Buckfield	½ acre	5,000 Raspberries
			10,000 Strawberries
Hoyt, William Hussey, J.	Ripley Oakland	½ acre	Perennials
			Spruce
			Peonies
			Perennials
Inmann, A. E.	Dexter	4/5 acre	6,500 Raspberries
			Blackberries
			Strawberries
Jackson, H. A.	Gorham	20 acres	7,000 Hedge
			400 Fruit trees
			6,000 Shrubs
			8,000 Perennials
			325,000 Conifers
			1,300 Raspberries
Jordan, George C.	Upper Gloucester	1/10 acre	1,300 Raspberries
Jordan, J. C.	Upper Gloucester	¼ acre	3,250 Raspberries
Kirk, Edward	Northeast Harbor	1½ acres	900 Shade trees
			600 Shrubs
			240 Roses
			600 Evergreens
			150 Hedge
			12,000 Perennials
Lapham, E. A.	Pittston	1/12 acre	1,000 Raspberries

Lily Pond Nursery	Rockport		12 Evergreens 15 Shrubs 5 Bay trees
Loder, A. J.	Bangor	1/40 acre	50 Shrubs 20 Roses
Lombard, T. M.	Auburn		Strawberries 1,300 Raspberries
McCabe, E. T.	Bangor	1/10 acre	150 Shade trees 80 Fruit trees 200 Shrubs 75 Roses 50 Blackberries 200 Raspberries
McCabe, John C.	Bangor	2 acres	100 Fruit trees 800 Shade trees 400 Shrubs 200 Hedge 25 Evergreens 50 Roses
McCabe, R. F.	Bangor	1/10 acre	100 Hedge 100 Shrubs 50 Fruit trees 50 Shade trees
McCausland, H.	Lewiston	1 acre	13,000 Raspberries
Macomber, E. R.	Portland	1/2 acre	1,000 Hedge 100 Shade trees 500 Perennials 500 Shrubs 200 Evergreens

NAME.	LOCATION.	ACREAGE.	
Mahoney, George L.	Saco	5 acres	800 Shade trees 4,000 Hedge 500 Perennials 100 Shrubs
Martin, John	Bangor	1/40 acre	150,000 Conifers 25 Azalias 25 Shrubs 50 Perennials
Maxim, H. F.	Locke's Mills	18 acres	400,000 Raspberries 10,000 Blackberries 20,000 Strawberries
Merrill, Charles	Auburn	1/4 acre	Strawberries
Merrill, Mrs. H. L.	Auburn	1/2 acre	6,500 Raspberries
Miller, William	Bar Harbor	1/5 acre	300 Roses 200 Shrubs 12 Shade trees
Minot Co., J. W.	South Portland	1/8 acre	10,000 Perennials 25 Shrubs 60 Roses 100 Peonies
Mitchell Nursery Co.	Waterville	1/16 acre	100 Hedge
Morse, Fred H.	Freeport		500 Shrubs Blackberries Raspberries Strawberries
Moulton, W. G.	York Village		200 Hardwoods 100 Roses

Mount Desert Nurseries	Bar Harbor	50 acres	30,000 Perennials 6,000 Evergreens 15,000 Shrubs 1,000 Shade trees 1,000 Fruit trees 2,000 Hedge
Palmer, C. R.	North Dexter	1½ acres	19,500 Raspberries Strawberries
Pejepscot Paper Co. Nursery	Topsham		5,000 Norway spruce
Perkins, C. S.	East Vassalboro	½ acre	5,000 Raspberries 1,000 Blackberries 3,000 Strawberries
Perley, C. A.	Winthrop	1/12 acre	50 Perennials 20 Conifers 25 Hardwoods 50 Ornamentals
Phillips, H. B.	Auburn	3/10 acre	Blackberries Strawberries
Phillips, Willard H.	Ellsworth	¾ acre	6,500 Raspberries Strawberries
Pleasant View Farm	Rockport	1 acre	6,500 Raspberries Strawberries
Plummer, H. L.	Gorham	5/8 acre	3,250 Raspberries Blackberries Strawberries
Pollard, D. A.	Auburn	¾ acre	9,750 Raspberries
Roak, G. M.	Auburn	1/10 acre	15 Azalias 100 Roses 200 Shrubs 200 Perennials

NAME.	LOCATION.	ACREAGE.	
Saunders, Ernest	Lewiston	1/10 acre	3,000 Perennials
			1,000 Azalias
			100 Shrubs
			250 Roses
Smith, T. W. A.	Biddeford	1/16 acre	Shrubs
			Roses
			Perennials
			Strawberries
Start, A. O.	Union	1/2 acre	
	State Forest Nursery	Orono	1 acre
			30,000 Spruce
			50 Butternuts
			100 Black locust
			500 Poplars
			3,900 Raspberries
Steele, Joseph F.	Auburn		
	Stevens, Mrs. David A.	Presque Isle	1/40 acre
			Shrubs
			50 Peonies
			Strawberries
Strand, S. H.	Topsham	1/4 acre	
	Strout's	Biddeford	1/40 acre
			400 Roses
			500 Perennials
			1,000 Perennials
			200 Shrubs
			100 Roses
Sutherland, Robert	Bath	1/20 acre	
	Swift, Mrs. Julia M.	Farmington	1/4 acre
			75 Peonies
			25 Vines
			6 Shade trees

Twitchell, Dr. G. M.	Monmouth	$\frac{1}{8}$	acre	Strawberries Raspberries
Wallace, A.	Portland	$\frac{1}{4}$	acre	100 Roses 100 Shrubs 500 Hedge 200 Perennials 12 Evergreen 12 Shade trees
Warren, W. L.	West Baldwin	$\frac{3}{4}$	acre	3,250 Raspberries Strawberries
Woodman, S. B.	New Gloucester	$\frac{1}{2}$	acre	6,500 Raspberries
Wooster, E. W.	Washington Jct.	$\frac{3}{5}$	acre	5,000 Strawberries 2,000 Raspberries
York, H. Q.	New Sharon	$\frac{1}{4}$	acre	3,250 Raspberries Strawberries



## CARLETON ORCHARDS.

The year 1918 ends the fourth year of the Second Carleton Orchard Contest, there being 42 orchards now in the contest. These orchards are entered for a prize offered by the late Hon. James J. H. Gregory of Marblehead, Mass., who gave a bond of \$1,000 in memory of his friend, Marcus Manard Carleton, the interest of which should be given for the best acre of trees five years from date of planting, this to be repeated at intervals of five years. Premiums have been added to both contests by other parties.

In the spring of 1920, the Third Carleton Contest will commence with, it is hoped, the largest number of contestants that have yet entered. It is suggested that parties proposing to enter this contest should get their land in good condition by cultivation and fertilization, so that the trees when set, may be able to make a good start; also that they order trees early, notifying the companies for what these trees are to be used, and by so doing procure fine trees.

These orchards are visited annually by some member of this Bureau and advice given as to care of trees. In trying to determine what the standard measurements of young trees should be, I have measured a large number of Carleton orchards and on following page are given a few measurements of the four years' growth.

By continuing this method of measurement for five years, a standard for each year's growth may be established, so that each contestant may know how his trees compare with others in previous contests.

A glance at this list shows that trees grown in cultivated orchards made better growth than those in sod. Especially was this true in dry seasons, the reason for this being that the growing grass took from the trees the richness and moisture so necessary for their best development.

Variety.	Average circumference six inches from ground.	Average diameter of head.	Average height.	Plowed.	In sod.
Stark and Wealthy	6.8"	8' 2"	10'	Plowed	
Stark	6.5"	7' 1"	7' 7"	Plowed	
Stark	4.66"	5'	7' 4"		In sod
Stark	7.33"	8' 2"	9'	Plowed	
Stark	8.2"	9' 6"	9' 8"	Plowed	
Northern Spy	6.3"	8' 4"	8' 4"	Plowed	
Northern Spy and Wealthy	3.5"	3'	4' 9"	Plowed	
McIntosh Red	4.8"	5' 3"	6' 3"		In sod
McIntosh Red	3.5"	5' 2"	6' 4"		In sod
McIntosh Red	5.5"	7'	7' 6"	Plowed	
McIntosh Red	6.12"	7' 5"	8' 3"	Plowed	
Delicious	6.9"	8' 2"	8'	Sod Mulch	
Delicious	6.7"	8'	8'	Sod Mulch	

## WESTERN MAINE FRUIT GROWERS' CONVENTION.

A Fruit Growers' Convention was held in Auburn, February 19-20, for the benefit of the orchardists of this state. The following programs were enjoyed by good audiences, the total attendance being more than 300 people.

## PROGRAM

## AUBURN HALL

## FIRST DAY

9.00 A. M.

Registration	
Address of Welcome,	The Mayor
Response to Address,	H. L. Keyser, Greene Maine Pomological Society
Orchard Renovation,	W. C. Robinson, North Anson
Summary of Fertilizer Situation,	A. M. G. Soule, Augusta Chief, Bureau of Inspection
Cold Storage,	C. W. Mann, Pomologist, Dept. of Agri., Wash., D. C. John Wiseman, Lewiston
	1.45 P. M.
Pruning,	George A. Yeaton, Norway Agricultural Extension Service
Insect Pests and Fungous Diseases,	Frank H. Dudley, Augusta State Horticulturist
Bees and Their Usefulness in the Orchard,	O. B. Griffin, Caribou
Studying the Bee,	Mrs. Ella N. Stockman, Auburn

## ODD FELLOWS HALL

(Main Street)

7.00 P. M.

Supper	
Dust Spray or Dusting Fruit Trees (Illustrated),	Dr. Donald Reddick, Ithaca, N. Y. Cornell University
Discussion, opened by	Wilson H. Conant, Buckfield President of Fruit Growers' Exchange and Fred A. Ricker, Turner

## AUBURN HALL

## SECOND DAY

8.30 A. M.

Address,	Hon. John A. Roberts, Augusta Commissioner of Agriculture
Transplanting Trees by Use of Dynamite,	Thomas E. Chase, Buckfield





Oxford County Orchard Scene.

Modern Methods of Growing Apples, Prof. F. C. Sears, Amherst, Mass.  
 Orchardling as I Have Found It, Dr. A. N. Leonard, Lewiston  
 Apple Packing and Packages, S. H. Eaton, Augusta  
 Assistant Horticulturist

Discussion:—What Legislation can be Enacted to Promote the Orchard  
 Interests of the State?

1.45 P. M.

#### MARKET GARDENING

Small Fruits, H. F. Maxim, Locke's Mills  
 Neglected Opportunities in Market Gardening, F. E. Daggett, Topsham  
 Market Gardening To-day

#### DUSTING FRUIT TREES.

The dusting of fruit trees instead of spraying is a new departure for the State of Maine, as it has only been practiced for the past two years.

The materials used for dusting are sulphur, 40 per cent; lead arsenate, 10 per cent; hydrated lime, 50 per cent; all reduced to a very fine powder. Another mixture is sulphur, 80 per cent; lead arsenate, 20 per cent; also a mixture consisting of sulphur, 40 per cent; lead arsenate, 10 per cent, and gypsum, 50 per cent; the latter ingredient being used principally as a filler.

Finely ground tobacco is used in dust mixture to destroy aphides.

Three dusting machines are now being used in this state.

Since dusting is a new departure, it is considered important that a few words be said here in regard to it. Quoting from Dr. Reddick's lecture delivered at the convention at Auburn:

"Dusting plants to protect them from diseases is a new thing. The method was first used extensively in France in 1850 and subsequent years, for the control of the powdery mildew disease of grapes. Sulphuring of vineyards is still a regular practice in Europe and about 100,000 tons of sulphur are used annually for this purpose. It is to be noted that the use of sulphur as a fungicide antedates the use of Bordeaux by over thirty years. But the discovery of the value of Bordeaux mixture for the control of grape downy mildew and black rot led to a wide extension of the use of this mixture for many diseases. Bordeaux mixture has been dried, pulverized and applied in the

form of dust both abroad and at home. The 'dust Bordeaux' was used most extensively in this country between the years 1895 and 1905. Numerous experiments, mostly in apple orchards, were performed in several states in which a dust mixture containing 'dust Bordeaux,' lime and Paris green were used. The outcome of this experimenting was that the dust method was wholly discredited, largely because of the failure to control apple scab.

"About ten years ago, the use of Bordeaux mixture on apples was given up in the northern states and there was substituted for it lime-sulphur solution. Some time previous to this, Paris green had given way to arsenate of lead as more effective for the control of biting insects. The latter material appeared on the market at about that time in powdered form.

"In view of the fact that lime-sulphur solution quickly disintegrates when sprayed onto trees, leaving only elemental sulphur as the effective fungicidal ingredient, and in view of the fact that the few early trials with powdered arsenate of lead had given good control of the codling-moth, it seemed that very fine sulphur combined with powdered arsenate of lead might prove effective as a substitute for the lime-sulphur-arsenate of lead spray mixture. Experiments were planned to make such a comparison of dust and spray under New York conditions."

Maine orchardists, who heard the writer's remarks before the State Pomological Society a few years ago, will understand how important the time factor is in treating apple trees to prevent apple scab and will realize why this subject is discussed first. New York orchardists usually have only a few favorable days in which to make effective treatments, and in many cases their acreage is so large that they have difficulty in covering their orchards with a protective spray at the proper time. Dusting was found to be a much more rapid method of treating trees than is spraying. How much more rapid depends largely on how well equipped a grower is for spraying. In the various experiments, the relative time varied considerably, depending largely on the conveniences at hand for spraying. In general, six or eight times as many trees could be dusted in a given time as could be sprayed. A direct comparison is not practicable because, in spraying, the time consumed at the tree is the important item (aside from the time required to drive to and from







Insect Exhibit at New England Fruit Show, Portland, Me., November 18-23, 1918.

the filling station and the time required for filling), whereas, in dusting, the outfit does not even pause at the tree, and the number of trees covered per day depends on how rapidly the team can walk and on how far apart the trees are.

I saw in Androscoggin County an acre of trees dusted in less than one-half hour. In a well laid out orchard 30 to 40 acres may be dusted in one day.

#### FRUIT SHOW AT PORTLAND.

A combined meeting of the New England Fruit Show, Maine Pomological Society, Maine Dairymen's Association, Maine Seed Improvement Association, Maine Livestock Breeders' Association and Boys' and Girls' Clubs was held at the City Hall, Portland, November 18-23. Each of the New England states were represented. There were apples from Massachusetts, New Hampshire, Connecticut and Rhode Island. Our own state made an excellent showing considering the weather conditions experienced during the past winter.

A new and much appreciated feature of this show and one which is recommended for future exhibits was that of placing apples on sale so that they might be bought by the visiting public in barrel lots, by the box or dozen, or by the piece.

#### INSECT EXHIBITS.

Large exhibits of insect pests and fungous diseases of plant life were shown by your horticulturist at the Portland Fruit Show and Waterville Fair, also smaller exhibits were shown at State Grange, Franklin County Fair at Farmington, and Lincoln County Fair at Damariscotta. A cut of the Maine Horticultural exhibit shown at Portland will be found in this report.

Not only were the usual exhibits of insects shown, but diseased condition of fruit trees, and several framed photographs of good size showing diseased trees.

Much interest was shown in the exhibits, especially was this true of the European Corn Borer, which was shown by mounts, and jars showing the insects attacking the stalk and ear. The last named specimens were obtained from Massachusetts.

## DEFOLIATED TREES.

In an orchard in the town of Raymond, the Spring Canker Worm defoliated 150 trees in one orchard. A photograph of this orchard was taken on June 5th showing the damage done. A cut from this photo appears in this report. A thorough spraying would have prevented this damage and saved one or two years' crops of fruit.

*Spring Canker Worm* (*Paleacrita vernata*, or inch-worm) lays its eggs during the spring. The moths emerge from the pupa state in the soil about the month of April. The moths are wingless and crawl up the trees laying their eggs in masses under loose bark or in cracks. The eggs are yellowish-green. They are oval in shape and about one-thirty-fifth of an inch long. These eggs hatch in about four weeks. The young commence to eat holes in the leaves just as they are starting to open, and later consume all but the mid ribs of the leaves. If the trees are jarred, the caterpillars spin down and hang suspended from their silken strands. The caterpillars become full grown in five or six weeks. They soon enter the ground to the depth of from four to five inches and change to pupae, where they remain until the following spring.

*Control.* Late fall plowing will bring these pupae to the surface where the severe winter will destroy them. Banding trees with a sticky substance, early in the spring, will keep the wingless moth from crawling up the tree trunks to deposit eggs. Spraying will kill all caterpillars. (See Spray Calendar).

## BOSTON CONFERENCE.

Early in September, a conference of federal and state authorities was called in the city of Boston, which I attended. The purpose of this conference was to discuss the situation relative to the ravages of the European Corn Borer and to recommend measures for its control, and, if possible, its extermination.

A short time later a federal quarantine was declared prohibiting the shipment of any corn on the ear or corn-stalks, from the infested area into any other state.

During the month of November another meeting of state authorities of New England was held at Portland. At this meeting it was voted to petition the United States Department of Agriculture to ask for an appropriation of \$500,000 to be used for the extermination of the European Corn Borer.

While in attendance at the meeting in Massachusetts, by inquiring at the markets, I learned of a score of places in this state to which corn on the ear had been shipped from the infested area. Since that time, I have visited a number of these places looking for the borers but have found none. During the late fall, however, I learned of three places where the European Corn Borer had undoubtedly been working. The work of inspection for this pest should be continued in the spring.

#### CORN BORERS.

Corn is one of the important crops of this state being valued yearly at about \$450,000, and to help safeguard it against the present pests as well as the threatened one, the European Corn Borer, I published and distributed a full description of four of the pests which are doing the most damage to this crop. A description of these pests is as follows,—

*The European Corn Borer* (*Pyrausta nubilalis*), is an established pest in Massachusetts, and it is feared that there are several infestations in this state. This pest has been working in Massachusetts for about eight years, but not until the fall of 1917 was any investigation made by the authorities regarding it. From 80,000 to 100,000 acres in and around greater Boston are seriously affected.

This borer is known to be widely scattered throughout Western, Central and Northern Asia; also Japan and Central Europe. It is thought probably that it was brought to this country in hemp shipped to a cordage company in the vicinity of Boston.

*Description.* The full grown caterpillar is about one inch in length, in color somewhat reddish or smoky, the head being dark brown and flat. There are four light colored spots on each abdominal segment, from each of which arises a stout hair. These marks distinguish the European Corn Borer from the Common Corn-stalk Borer.

Two broods of this pest are hatched during the season to destroy the corn crop. As the moth lays about 400 eggs for the first brood and 700 for the second, it would be possible in a single season to produce from 200,000 to 300,000 caterpillars from one pair.

The larvae pupate in the spring and the moths of the first brood usually appear the first or second week in June. The second brood appears about the last of July. The eggs are laid on the under side of the leaves in patches of twenty to thirty, and it requires but a few days for these to hatch. The young soon eat their way into the stalk after feeding for a short time upon the thin tissue of the sheath. The second brood does not transform to pupae, but passes the winter within the stalks to appear the next spring.

Great damage is done by this pest piercing the tassel stalk and feeding upon the interior. The tunneling so weakens the tassel stalks that they are soon broken over, and the pollen, which is so essential for pollenization of the corn-silk, is destroyed. In some cases 50 to 75 per cent of the crop is destroyed.

*Control.* This pest winters in corn-stalks and weeds, therefore, if all corn fodder is fed out, or put into a silo, composted or burned, and all weeds destroyed, this pest may be exterminated.

*The Common Corn-stalk Borer* (*Papaipema nitela*) is often called the Heart Worm from the manner in which it destroys the corn. The wilting and breaking down of the top is a marked indication of the presence of this pest. A round hole in the stalk plugged with the brown excrement of the caterpillar will be seen. In the spring, while still young, this pest frequently gains its sustenance from grasses and weeds, but as it grows larger, it demands the food from the thick stemmed plants like corn and potatoes. Besides corn and potatoes, this pest feeds upon wheat, oats, and timothy, blackberry and raspberry canes, tomato plants, rhubarb and spinach, also upon weeds having thick stems, such as burdock, ragweed and pigweed.

*Description.* The corn-stalk borer, when fully grown, is about one inch in length, brown in color and bearing five white stripes, the one on the back running the entire length of the body, the other four being interrupted in the first four segments

of the abdomen. The head and anal shield are of a reddish yellow color with a black stripe on either side.

This pest bears but one brood a year and by the first of July they are sufficiently grown to enter the corn-stalk. Pupation usually begins the latter part of July, and the moths appear from the middle of August to the latter part of October. The eggs are probably laid in the grass lands in the fall and hatch the following spring.

*Control.* If an infestation has been found, all grass plats adjoining a corn field should be mowed and the grass carried promptly away to be fed out or burned.

*Corn Ear Worm or Bollworm* (*Heliothis obsoleta*). This caterpillar's method of destruction is to bore into and feed upon the plant tissues of the corn-stalk, and, later, on the ear. The tender leaves and buds are the first portions to be attacked. Later, the injury extends to the tassels before they are fully opened.

Eggs are laid upon the silk through which the small kernels are reached, the tips of the ears being the first to receive injury. In sweet corn, this pest frequently eats the entire length of the ear, completely destroying it. In some states, 50 to 75 per cent of the ears are destroyed, while in Maine the damage has been considerable.

Wet seasons are more conducive to the spread of the pest, since, after pupating in the ground, they emerge more easily from the wet soil. Certain molds gain access to injured ears especially during wet seasons, making the corn-stalks thus affected unfit for consumption by cattle.

*Description.* The caterpillars of this pest vary in color from light green to dark brown, and are usually striped or spotted, although, sometimes, they are perfectly plain. They attain full growth in two or three weeks, and are from one to one and one-half inches long. There are two broods of this pest during the season in the northern states. The first brood attacks the corn when it is about knee-high, and feeds on the tender leaves. About a month later, the second and more destructive brood appears, which attacks the ears.

*Control.* Deep plowing of the infested land, during late fall, will bring the pupae to the surface of the ground where the severe weather will destroy them.

*Woolly Bear, or Salt Marsh Caterpillar* (*Estigmene acrola*)  
These are called *woolly bears* from the fact that they are entirely covered with long hairs. This pest, like others, feeds upon various garden vegetables and weeds, but, during the past few years, it has proved very destructive to garden truck and the corn crop. Feeding as it does upon the silk, it prevents the pollenization of the ears.

*Description.* This pest when fully grown is about one and one-half inches long, and is thickly covered with hairs varying in color from yellow to red and brown, or nearly black.

*Control.* Hand picking is recommended, as, if poisoned sprays are used, it might result in the killing of cattle.

In closing, I wish to express my appreciation to the orchardists of this state for their hearty co-operation, and to you, my dear sir, for the encouragement and support given me in performing my duties throughout the year.

Respectfully submitted,

FRANK H. DUDLEY,  
*State Horticulturist.*

REPORT OF SPECIAL FIELD AGENT, GYPSY MOTH  
WORK.

*Hon. John A. Roberts, Commissioner of Agriculture:*

I have the honor to herewith submit my annual report as Field Agent, in charge of the Gypsy Moth work for the year 1918.

The task which has fallen to this Bureau in connection with gypsy moth control has been to use every effort possible to prevent the spread of the insect and to reduce the damage resulting therefrom. It has been necessary to carry through many extensive experiments in order to secure information for use in the field operations, and this work has formed the basis and the ground work for the application of field methods. A theory exists that, in its native home, every insect is held within reasonable bounds by parasites or natural enemies, and that each insect has some one species of parasite which is responsible for its control. It has become apparent that the gypsy moth is not controlled by a single species of parasite in its own native home or in this country as we now have 10 or more parasites established in the infested area and they are helping to solve the problem.

In addition to the work of these parasites we have established in the western part of the state the *Calosoma* beetle, which was observed in large numbers in towns where large colonies of the gypsy moth were present. In cases where the caterpillars were abundant, as many as four hundred beetles were found daily under the burlaps. Since they feed upon the pupae as well as upon the caterpillars, the amount of benefit derived is very great, although it is difficult to figure the percentage of larvae killed.

The *Flacherie* or Wilt Disease is also found to have spread generally throughout the moth infested territory in the western part of the state. This disease in combination with the cold



winter and the parasites and beetles has caused a greater mortality than ever before secured in any one year of the work. I am frank to say that the work has never been more thoroughly comprehensive and better prosecuted than at the present time.

Our organization is smaller, the men are giving greater study to the problems and more real work of a permanent nature is being done. The foremen and scouts are yearly acquitting themselves as men in whom confidence and public trust may be placed and there is a better and more wholesome understanding of the aims and purposes of the work.

#### THE WORK OF THE YEAR.

The crews started work on January 1st, and the scouting continued until the eggs hatched. As soon as the eggs hatched and the caterpillars began to crawl, spraying was begun and continued until the middle of August, with excellent results. In the spraying operations, we used eight tons of arsenate of lead, and millions of caterpillars were destroyed.

In the month of July, I began the burlapping of trees using the same burlap of the year before which had been saved and carefully rolled and packed away. These burlaps were very carefully attended by the men during the caterpillar season. 67,000 trees were burlapped and 876,258 caterpillars were taken from under the burlap band and destroyed.

During the scouting operations, 1,235,954 egg clusters were found and destroyed. In this work, 567 gallons of creosote were used in painting the egg clusters.

From Sept. 25th the men were given a vacation until Oct. 25th when the scouting work was again taken up and continued until Nov. 25th at which time the work closed for the year owing to the lack of funds.

#### EQUIPMENT.

No new equipment has been purchased this year and at the present time, we have in the spraying equipment, one 10 horse power sprayer, four 1½ horse power sprayers and eight 50 gallon barrel sprayers. In addition to this equipment, many

towns have power machines with which they are doing great work in caring for the street trees in their sections. One Dodge automobile in which I have travelled 11,000 miles and have been able to cover a great part of the infested territory with gratifying results.

Most of the working tools are in bad condition and it will be necessary to purchase new ones for the coming year.

#### CORRESPONDENCE.

In addition to the field work, a great deal of correspondence has been carried on by the Field Agent. During the year over 1400 letters have been received and answered, all of which related to the proper methods of handling the gypsy moth, many of them reporting new infestations. In such cases one of the inspectors or foremen visited the person making such report, with the purpose of teaching such person the proper methods for taking care of such infestations. By this method we have gained many friends and received a great deal of help, and I believe this service is the best that can be rendered to our citizens, as it helps them to properly care for their shade trees and orchards. A great deal of literature relating to the gypsy moth has been mailed to granges and other organizations throughout the state.

#### LECTURES.

During the year I have been called upon to lecture before several societies, such as granges, schools and churches. All of these lectures were illustrated with lantern slides, showing the life history of the gypsy moth, as well as the methods used in the field for extermination of same.

#### ORGANIZATION.

It has been my purpose to have the organization of the gypsy moth bureau composed of loyal, wide-awake, enthusiastic, experienced men.

A clear-cut organization, in which each man not only has a definite field of usefulness but is alert and full of enthusiastic interest, is absolutely necessary to success at the present stage in our fight against the gypsy moth. We now have a corps of men familiar with conditions throughout the state. The various crews are in charge of trained men. While our foremen are not all experts in entomology, nevertheless they are familiar with the fundamentals of this science and expert enough to observe new and extraordinary conditions. It is my policy to utilize the whole organization in the bettering of our conditions, and, while, each man has his definite routine of duty to perform, he at the same time assists in the control of all insect depredations which may arise.

There were a number of changes in the personnel of the bureau during the year owing to the war. Seventeen of the men resigned to go into the army and are now in France or with the colors in America. Of the seventeen, eight volunteered and the balance were inducted into the service by draft.

I sincerely trust that I may be in position to take all of these men back in the work when they are discharged from army service.

#### BENEFITS TO COME FROM BIRDS.

It is quite evident that by pursuing a policy for the protection of birds, the number of birds in the region infested by the gypsy moth and their efficiency as insect police could be greatly increased. At least a dozen species are useful in destroying the gypsy moth caterpillar, and probably twenty-five others are more or less useful, when the moths become very numerous or when other species of insects which these birds prefer are scarce.

Birds are particularly useful in preventing the increase of small colonies of the moth, and in this respect are allies to man in the work of extermination.

More species of birds are found attacking the moth in orchards than in woodlands, although woodland birds often visit orchards situated near their usual haunts, and orchard birds visit badly infested colonies in woodlands.

If laws for the protection of birds were enforced, and if birds

were fostered, encouraged and protected generally by citizens, there is no doubt that their efficiency as insect destroyers could be greatly increased.

#### PARASITE WORK.

This work has been conducted co-operatively with the U. S. Bureau of Entomology from the Laboratory at Melrose Highlands, Mass. Many new colonies of parasites have been established in different sections of the state and a great many older colonies strengthened. From information obtained as to dispersing, the results of the season's work have been most encouraging, and it will be the policy to continue to breed and distribute parasites more extensively.

#### FINANCIAL STATEMENT.

Appropriation for 1918,	\$35,000.00
<i>Expenditures.</i>	
Wages of field force,	\$30,565.75
Travel expenses, Field agent and two inspectors,	1,258.50
Supplies for Field work,	2,971.50
Printing and Binding,	15.86
Insurance, Laboratory buildings, supplies and auto,	106.95
Freight and express,	51.11
	<hr/>
Total expenditures,	\$34,969.67
Balance unexpended,	30.33
	<hr/>
	\$35,000.00

#### ACKNOWLEDGEMENTS.

I am pleased to acknowledge at this time the help and advice relative to parasite work received from the government agent, A. F. Burgess in charge of the Laboratory at Melrose Highlands, which has been freely sought and as freely given. To

the Chief Inspector, M. H. McIntyre, as well as the foremen and members of the force, I am glad to acknowledge my obligations for their loyalty to the organization, and their efficiency, to which in no small measure is due whatever success may be obtained in the work.

And to you, Mr. Roberts, allow me to express at this time my sincere thanks for your kind co-operation in all matters pertaining to the work of the bureau.

#### CONCLUSION.

At the present time in the state, there are infested with the gypsy moth seven thousand and fourteen square miles of territory, this is the same as last year as the area has not been reduced to any extent, but the colonies of the moth have been greatly lessened within this area.

With a continuance of the methods already introduced and with the purchase of a high power auto sprayer with the improved nozzles and hose couplings the work will be far more thoroughly done. When the Elm leaf beetle and similar insects begin affecting the tall trees, which is inevitable in the future, then I am confident the results derived from such a machine will be fully appreciated by the citizens of the state. By being able to throw a stream over the tallest of our shade trees from the ground, and hence eliminating the cost of climbing, not only is the great expense of labor overcome, but a whole town could be sprayed during the same length of time formerly required for the treatment of but a few trees.

The same power that drives the auto also does the spraying and is proving very satisfactory in Massachusetts, New York and other states.

While the expenditure of large sums of money has been necessary to combat the ravages of the gypsy moth in one of the most noted insect warfares ever undertaken, nevertheless, such an expenditure has been fully warranted by the results.

EDWARD E. PHILBROOK,  
*Special Field Agent.*

REPORT OF DEPUTY STATE SEALER OF WEIGHTS  
AND MEASURES.

*To Hon. John A. Roberts, Commissioner of Agriculture:*

As State Deputy Sealer of Weights and Measures, I respectfully submit to you the sixth annual report of the work done by this Department.

This year the local sealers were elected under the new law which was passed at the last session of the Legislature putting them virtually under civil service. In other words, they cannot be removed except for inefficiency or neglect of duty which is much better than having a change every year. After a person has had one year of experience, he is much better qualified to fill the office of sealer, and so on for each succeeding year.

The past year has been very successful. The sealers as a rule have taken a great deal more interest in their work. There have been six prosecutions for short weight;—one in Lewiston for short weight of grain, in which there were two charges. The party pleaded guilty and on one was fined ten dollars and costs and on the other fifty dollars and costs. He was allowed to settle by payment of costs. Four cases in the city of Portland;—George L. Talbot, on July 25, 1918, paid ten dollars and costs on short measure of wood; on August 12, 1918, Fred H. Libby for short weight in potatoes, complaint quashed for insufficient evidence; on Sept. 25, 1918, Joseph Shurrin in municipal court for alleged short weight on apples found not guilty; on October 31, 1918, Harry F. Stoddard in municipal court for refusing the sealer permission to make proper test of weights, fined \$5.00 and costs which were paid. There was one case in Bethel for short measure of wood which was decided against us on account of surveyor not having qualified.

The handling of ice is one of the hardest problems with which we have to contend. When the dealers advertise to sell about 25, 50 or 100 pounds for so much money, it is almost impossible

to make out a case of short weight against them that would warrant being taken into court, and we have more complaints in regard to the short weight of ice than any other commodity. I think that some legislation should be passed on this matter.

The past summer, after trying for a long time, we were able to have the government test car in this state for about ten days. We found the railroad track scales in very bad condition, but owing to the fact that most of the large scale factories were doing government work, it has been impossible to have much done in the way of repairs. I am in hopes that in the coming year all railroad scales will be put in first-class condition.

The policy of the Department is to strike impartially, and this principle is followed to the letter in the treatment of merchants of all classes. Our usefulness to the welfare of the citizens of the state is obvious. We insist that they get full quantity for what they pay, which, after all, can be a means of reducing the high cost of living, for it is easy to understand that when a full quantity is at all times received, the money of the consumer has a greater purchase power than would otherwise be the case if discrepancies were allowed to creep in, which they assuredly would, but for the watchfulness of the officials of weights and measures.

A meeting of the local sealers was called for October 29, but was indefinitely postponed on account of the influenza epidemic.

In connection with the report of this office you will find a tabulated report from the local sealers representing three hundred and seventy-nine towns. This gives, I think, valuable information in regard to the good work which is being performed.

In conclusion, I wish to thank the Governor and Council for the many courtesies extended me, also the local sealers for the interest which they have taken in their work, and you especially, I wish to thank for your good advice and hearty co-operation in all matters pertaining to this office.

Respectfully submitted,

LEVI S. PENNELL,  
*State Deputy Sealer.*

## SUMMARY

Counties	Number Tested							Number Condemned							Adjusted		
	Scales	Weights	Dry Measures	Liquid Measures	Yard Sticks	Automatic Pumps	Milk Jars	Scales	Weights	Dry Measures	Liquid Measures	Yard Sticks	Automatic Pumps	Milk Jars	Automatic Pumps	Scales	Weights
Androscoggin Co.	1,160	747	53	289	33	127	369	17	3	..	4	1	5	18	..	17	11
Aroostook Co.	1,121	1,435	244	383	111	289	1,062	31	13	5	29	5	12	46	..	..	..
Cumberland Co.	1,383	2,964	317	538	61	257	563	191	13	27	9	..	3	..	..	3	..
Franklin Co.	376	542	32	157	84	78	4	1	7	..	..	..	1	..	..	..	..
Hancock Co.	657	1,133	138	515	68	124	8	16	4	..	26	4	3	..	..	..	..
Kennebec Co.	655	1,124	54	377	146	173	720	8	1	1	5	..	..	..	..	..	..
Knox Co.	769	1,655	188	576	116	137	954	22	47	8	17	5	3	7	..	..	..
Lincoln Co.	438	737	70	221	30	55	..	5	2	..	..	2	1	..	..	..	..
Oxford Co.	740	499	51	256	34	152	815	11	..	1	2	..	2	..	1	3	..
Penobscot Co.	1,174	2,353	153	274	116	313	147	16	11	6	13	2	5	13	6	6	15
Piscataquis Co.	173	341	22	80	21	43	..	1	..	..	..	..	..	..	..	..	..
Sagadahoe Co.	359	397	97	148	6	5	265	13	2	5	8	..	..	..	..	..	..
Somerset Co.	626	865	111	281	50	118	..	14	18	1	7	1	4	..	..	..	6
Waldo Co.	470	928	63	210	46	159	85	4	6	..	2	2	..	..	..	..	2
Washington Co.	713	1,432	206	483	92	210	598	10	..	..	1	..	1	..	..	..	..
York Co.	1,101	2,573	282	286	87	223	7,652	5	2	4	3	..	..	..	..	..	..
	11,915	19,725	2,081	5,074	1,101	2,463	13,242	365	129	58	117	22	40	84	7	29	34

DEPUTY STATE SEALER OF WEIGHTS AND MEASURES.



## REPORT OF CHIEF OF BUREAU OF ANIMAL INDUSTRY.

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*To Hon. John A. Roberts, Commissioner of Agriculture:*

I herewith present my second annual report of the Bureau of Animal Industry. The work of this Bureau, like many others, has been changed somewhat the past year because of conditions resulting from the war. Considerable work has been accomplished in co-operation with organizations to help feed the world and, at the same time, win the war. This was made possible by the fact that because of the shortage of labor and the effort of Maine farmers to do their part in food production, the requests for speakers at public meetings have been fewer than usual and the attendance at the meetings held has been in most cases rather small. Personally I have addressed twenty-four meetings the past year with a total attendance of 1161 people.

### DAIRY INTERESTS.

The extreme scarcity and high price of grain and grain-feed products, together with the shortage of help, has made it doubly hard on the dairy farmers of the state. That so few have gone out of business is due to the fact that through the untiring efforts of the New England Milk Producers' Association, backed by a membership of fifteen thousand New England milk producers, the price of milk has been advanced as increased cost of production was shown. The price of milk is, of course, the base for determining the price of all other dairy products. The New England Regional Milk Commission has been of the greatest assistance in this price fixing. They have proven themselves broad-minded men who could see both sides and were not biased by prejudice, warped by personal interests, or bought by friends. The work of getting a cost price, plus a reasonable

profit for milk by the New England Milk Producers Association has been done entirely before the Milk Commission the past year and I feel that they have been just as anxious to get the facts concerning the cost of milk by the farmers as they have the cost of distribution by the dealers. This Bureau has helped in every way possible both the New England Milk Commission and the New England Milk Producers Association and, it has been time well spent. To be sure, not every herd shows a profit to its owner at the prices established. This would be impossible because so much depends on the quality of the herd and their care, but the high cost of feed and labor has set many a farmer thinking, with the result that many of the cows that could not make good have gone for beef. If returns do show a decrease in the number of dairy cows in Maine during 1918, I look upon it as good business on the part of Maine dairymen. With such high prices today the difference between a good cow and a poor one is so great there is no excuse whatever for keeping a poor one, and the dairyman that does not take steps to find and dispose of his low producers is not a business man and ought to be a laborer for someone who is.

#### BEEF BREEDS.

It is with pleasure that I note the growing interest in the beef breeds of cattle in many sections of the state. Not every farmer or every town is located where dairying can be conducted profitably and there is a great field for the development of beef animals without hurting the dairy interests in the least. I am very glad the attention of so many Maine farmers is being turned in that direction.

#### SHEEP HUSBANDRY.

There has been a tremendous come back in sheep the past year. Maine was designed by the Almighty for a sheep state and the come back should mean a great deal to the Animal Industry of Maine. So much work developed in the interests of this branch of the Department that C. H. Crawford of Dexter has given charge of this work last April. Mr. Crawford has

proven the right man for the place and has done a great amount of good throughout the state as a large number of sheep breeders will testify. I will not go into detail regarding this work as he is making a separate report.

#### POULTRY.

A year ago, because of the extreme scarcity and high price of grain, the interest in poultry was at low ebb, and there was almost a panic among poultry breeders to get out of the business with the result that fully fifty per cent of the poultry in Maine was sent to market at a low price and in most cases with no thought on the part of the owner to separate his culls, or low producers, and retain his high producers. As is the case of the dairy cow, the profit from a high producer was never better or the losses on a low producer never greater and the poultryman must be able to pick both kinds, retaining the one for egg production and disposing of the other for meat. This Bureau, in co-operation with the Extension Service of the University of Maine and the Commission on Food Production and Conservation, put out a series of news letters direct to the poultrymen of Maine along the line of culling, breeding, feeding, housing, grading, and marketing products, which I think did a great amount of good.

I have also held two series of poultry institutes with help of speakers from out of the state that have created a good amount of enthusiasm and helped to bring back the interest in poultry that today is greater than I have seen for many years. I have also put considerable time into the organizing of the New England Poultry Producers' Exchange that is planning in the near future to open an office in Boston to handle the eggs and poultry of its members, grading and selling them under the brand of the Association to the trade that is demanding the best and is willing to pay a premium for uniform quality. When we consider that New England uses from 30,000 to 35,000 cases of eggs per week and that less than ten per cent of that number is produced within this territory it can readily be seen that there should be a good premium paid on that part of the ten per cent that reaches the consumer in first-class condition, properly grad-

ed and under the seal of a reliable organization of producers.

The one thousand dollars per year appropriated by the legislature to be expended under the direction of the Commissioner of Agriculture through the different poultry shows has been expended in utility prizes, lectures and demonstrations. The allotment to the different shows being based upon their actual expenditures on utility features and are as follows:

Freeport .....	\$150.99
Western Maine .....	225.05
Bangor .....	277.05
Maine State .....	346.91

This allotment is not sufficient for the best interests of these shows in carrying out an educational program, and I hope the amount may be doubled. When some of the western states are appropriating \$40,000 for this poultry development work it does seem that Maine should furnish \$2,000.

#### MILK INSPECTION.

During the past year, the milk inspection has been consolidated with this Bureau. The work along this line, as a whole, has not been entirely satisfactory. Brooks Brown, who did such good work as Milk Inspector last year, resigned the first of the year to enter the service, and V. C. Bowman of Pittsfield was appointed to that position, holding it until October 1st. Later M. R. Umberhind had charge of the work and, while Mr. Umberhind had very little experience in dairy work, yet he had been a pure food inspector for the Bureau of Inspection and has proven a most energetic and efficient milk inspector. His work has been very satisfactory to everyone concerned. On December 16th, Brooks Brown returned to his former position and we are planning on more and better dairy inspection in the future than ever before.

We are hoping that the dairy laws will be so amended this winter that a fee will be placed on milk licenses and the money received from this source be added to the appropriation by the state for this work. If this is done, we can employ two men in-

stead of one and can do more and far better work than in the past. With only one inspector the work is of necessity spread too thin and we have numerous complaints from various cities and villages that they are being slighted. Again it seems most fitting that the milk men themselves pay part of the cost of this inspection work as they will be doing if they pay a fee for their milk license and that was used for additional inspection work.

The war is now past history, and none of us want to pass through another two years like the last. The outlook for animal industry in Maine was never better than at the present time. The demand for good breeding stock in all lines is going to be excellent while the market for cattle, sheep and poultry products as well as pork is, according to present indications, bound to be good for many years to come. Now that we can give our whole time to lines of improvement in breeding and management, I am looking forward with a great deal of optimism to the future of Maine's animal industries.

In closing, I wish to thank you for your guidance and help at all times and also every member of the department for their co-operation and assistance in every possible way.

Respectfully submitted,

HERBERT M. TUCKER,

*Chief, Bureau of Animal Industry.*

## REPORT OF SHEEP SPECIALIST.

*To the Hon. John A. Roberts, Commissioner of Agriculture:*

I herewith submit my first report as Sheep Specialist.

On assuming the office in April, which is the lambing season, I found many requests for assistance from various sections, and these calls have continued throughout the entire year. Answering these calls from so many sections has given a great opportunity for study of conditions under which sheep are kept throughout the state.

Sheep husbandry should receive more attention from the farmers of this state. Unquestionably, sheep raising can be fitted profitably into the general management of hundreds of farms where there are none at the present time. On many other farms the size of the flocks could be increased and more attention given to this branch of farming with profit to the owner. In most every case where flock owners have used good judgment and care in the selection of breeding ewes and rams, and have given them good feed and care, fine flocks are to be found which return good profits to their owners.

I believe that the Department of Agriculture has undertaken a work that, if properly carried out, will result in a general increase in the numbers of flocks, and a greater increase in the productiveness of those already kept.

There are many farms in the state located a long distance from potato markets and corn canning factories that are abandoned, or partially so, because they are unprofitable. Here is the great advantage in sheep husbandry. Sheep naturally enjoy the quiet life and the good feeds that can be produced as well on farms located miles from markets as those nearby. Another great advantage in keeping sheep on such farms is, that instead of being obliged to go long distances to market their products, the market comes to you, since, when the season's clip of wool is off, buyers start out, and, in many instances, take the

wool away with them. Then again, when the lambs are ready for market, the buyer comes to your door, purchases the lambs, and drives them away. The producer is saved the time and expense of making many trips to market with his products.

The production of both wool and mutton can be increased substantially by giving instruction in the proper care and feeding during the different seasons of the year. It is a well-known fact that both the quality and the quantity of the fleece and lamb depend largely on the feed and management of the ewe during the year.

Every influence should be brought to bear on both the present and prospective flock owners to use more care in the selection of breeding stock since this is the natural way to increase both the productiveness and the profits. A good flock of well-bred and well-kept sheep is sure to return to their owner good profits, while a poor flock, poorly bred and kept, is most sure to bring a loss.

Diseases most common to sheep in New England have spread to an alarming extent throughout the state. Disease is one of the greatest menaces to a normal production of both wool and mutton. It is impossible for a ewe when infested with any of the parasitic diseases, viz.: stomach worms, tapeworms and nodular disease to produce a normal fleece or lamb. The wool is usually short and dry, of poor quality, and light in weight. The lamb is usually small and weak when dropped, and the ewe, in her weak, run down condition, fails to provide a sufficient amount of milk to keep the lamb in a thrifty growing condition. Every possible assistance should be given the owners to rid their flocks of these diseases and prevent their reinfection. The above mentioned diseases are largely responsible for the small percentage of lambs dropped, as when the ewe and ram are diseased (in many cases both are affected) there are sure to be many barren sheep especially in large flocks.

Many farmers have disposed of their flocks and many others have refrained from entering the business because of some of the difficulties that are peculiar to the industry. Among the most common of these are parasitic diseases and cur dogs. Every influence should be brought to bear on city and town officials to induce them to control the roaming dog as far as possible. If the present dog laws are inadequate, they should

be amended in such a way as to give the owners of flocks the best protection possible. Parasitic diseases are most discouraging factors with flock owners, and all assistance possible must be given to eradicate these.

Owing to the gradual increase in the price of both wool and mutton during the past three or four years, together with a shortage in farm labor, it was anticipated that there would be an unusual demand for breeding ewes and rams, and it was decided to do everything possible to save all good breeding ewes and ewe lambs from the butcher. A circular letter was mailed to the assessors of every town and plantation in the state, explaining the importance of the work, and requesting their assistance by mailing to this Department the name and address of every sheep owner in their town or plantation. Approximately four hundred returns were received. These were followed by another letter to the flock owners, containing the same explanation. Enclosed with these were questionnaires requesting information as to how many good breeding ewes, ewe lambs, mature rams and ram lambs they would have for sale, and whether pure bred or grade. Approximately 2,500 of these were mailed to flock owners and the returns have been gratifying.

Early in the spring, I was called to the farm of G. W. Marsh of Ripley, who had once been obliged to go out of the sheep business as a result of nodular disease brought into his flock by buying rams from infested flocks. His flock, at the time of my visit consisted of 60 sheep. More than half of them were found to be badly infested with the nodular disease. Realizing the serious condition, he decided that something must be done at once, or he would be obliged to go out of the business. After due consideration, it was agreed that, with such assistance as I could give, he would try rotation of pastures as a means of eradicating the disease. The pasture was divided into four sections and the sheep were changed every ten days, leaving a period of thirty days between pastures. The sheep showed signs of improvement through the entire season, while the lambs developed very few symptoms of the disease. This experiment was followed by a demonstration held at Mr. Marsh's farm on November 26. One lamb, one yearling, and one two year old sheep that had been rotated by Mr. Marsh were slaughtered, and one lamb, which was brought in by a neighbor and which



had been pastured in the ordinary way, was also slaughtered. The stomach and intestines of the latter were very carefully examined for the different parasites. Quite a considerable number of whip-worms were found and the stomach and intestines were quite badly infested with the nodular bunches many of which contained the nodular worm. The stomach and intestines of the lamb rotated by Mr. Marsh were next examined. Very few nodules were found and none of them contained the nodular worm or worms of any kind. The yearling sheep was next examined and many nodules, larger in size than those in the lamb, were found. No small ones nor worms of any kind were discovered. The next to be examined was the two year old. Many nodules still larger in size than those in the yearling were found but no worms.

This demonstration bears out the claim that the nodular disease is incurable, as in this demonstration it was found that the nodules increased very much in size each year, also that a continued rotation of pastures would in time eradicate the nodular disease from an infested flock. This demonstration had received wide publicity and many sheep owners from various sections had signified their intention of being present, but owing to the condition of the roads and the weather being very cold and windy, there were only thirty present. I believe this demonstration will prove to be of great value to those present and to sheep interests generally. Boyden Bearce, Livestock Sanitary Commissioner, and Dr. Purcell of Portland who were present assisted in post-mortem work, and in the discussion of the several diseases.

A great many inquiries have been received from prospective buyers for information as to where good breeding ewes and rams of the different breeds could be found. In every case, lists of those having such stock have been furnished.

I have addressed five grange meetings with an average attendance of 86, and one Farm Bureau meeting with fifteen present.

I have visited one hundred and eighty-nine flocks; have advised treatment, and in many cases personally treated ninety-four flocks comprising three thousand three hundred and ninety-six sheep.

I have received many letters giving symptoms of diseases and inquiries about many other matters concerning sheep husbandry. In all cases I have advised treatment and given all information possible.

Respectfully submitted,

C. H. CRAWFORD,  
*Sheep Specialist.*

## REPORT OF CHIEF OF BUREAU OF MARKETS.

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*To Hon. John A. Roberts, Commissioner of Agriculture:*

I herewith present my second annual report as Chief of the Bureau of Markets.

There never was a time in this country in the history of agriculture, when so much attention was given to the market problems, as at the present time, and as the result of a public demand during the past few years, market bureaus have been established in most of the states, and a Federal Bureau at Washington. These market bureaus have been of great help to the farmers along certain lines of work, in assisting them to dispose of their crops and purchase their supplies. There are certain things that the Bureau of Markets, working with individual farmers, can do, namely,—send out to the public a Daily News Market Bulletin, establish grades for the different farm crops, government inspectors in the large markets, and educational work by the means of bulletins, but to get the full measure of success, the farmers must be organized so that the different market bureaus may come in contact with groups of farmers interested along the same lines of farming, instead of single units. It is self-evident that this line of work can be conducted much more efficiently in groups than in units, and the problem of successfully marketing farm crops can only be accomplished through farmers' organizations. This is the only method to properly grade, sort, inspect, and put farm produce on the market in a condition to attract and hold buyers, with a continuous supply assured the customer during the season of the crops to be marketed. These are the essentials that must be complied with if success in marketing is to be attained. The object of a farmers' business or organization, whether engaged in buying farm supplies or selling farm produce, is to eliminate some of the expenses. In this country, when the produce reaches the table of the consumer, the price has advanced 100 per cent on its journey

from the farm. With efficient business farmers' organizations, accompanied with good business principles, and some efforts on the part of the consumer along the lines of cash and carry, this 100 per cent can be greatly reduced for the benefit of both the producer and consumer. In Denmark, where the farmers are the best organized of any country in the world into groups representing the respective agricultural industries in which they are interested, it only costs ten per cent to get the farm crops from the farms to the consumer. If this market question is ever settled satisfactorily, it must be by organized effort. If the farmers of Maine want to do this they can, but it means *effort*. Effort enough to keep the organizations they already have strong and healthy, loyalty on the part of the members, and faith enough in their business to give it their financial backing. The State of Maine has made a good start in farmers' organizations, and as the resolve under which this Bureau was established calls for co-operation among all these organizations, I will mention them somewhat briefly in this report.

At the annual meeting of the Farmers' Union last June, I was elected a member of the Board of Directors, and later by the Directors, elected President of the Farmers' Union of Maine. At the annual meeting it seemed to be the opinion of most of the delegates present, that the locals should own the majority of stock of the Farmers' Union Grain & Supply Company. At a meeting of the Board of Directors, F. A. Potter of Bangor and myself were appointed a Committee to devise ways and means to carry this out. Without entering into the details, I will say that the Committee made a canvass of the locals to get subscriptions with this end in view. At the present time it looks as though this would be accomplished the first of the year, and then the two offices at Waterville, the office of the Farmers' Union and the office of the Farmers' Union Grain & Supply Company will be consolidated under one management.

During the past year there have been 28 new locals organized. At the present time we have 122 Local Unions in Maine, some 75 of these locals have stores well established. In 1918 they did a business of over three million dollars, making a large saving for their members. This organization has given the members a business training along certain lines and some business principles have been learned. Some of these are:

(a) We must not expect financial results too soon. It is more important to establish a good business foundation than immediate financial returns.

(b) The members must have enough confidence in each other and themselves to properly finance their own business.

(c) That after paying interest on the stock sold, a certain amount of profit should be retained in the treasury for working capital. It is not safe to do business without some capital. One of the most successful locals that we have in Maine, have never paid any stock or trade dividends, but have kept all their profits for working capital, and the report of the treasurer at the last annual meeting showed that they had assets enough so that their stock was worth \$125 a share.

(d) That the locals should be loyal to the Central Organization, by ordering in the fall from their Manager, certain kinds of farm supplies which they need for the next year, like seeds, insecticides, fungicides, fertilizers, etc., as the fall is the best time to take advantage of the lowest market values.

The Manager of the locals passes this information along to the Central thus enabling it to buy under the best conditions possible and get the best results.

(e) As much as possible a strictly cash business. We hear a great deal about the "cash and carry" plan, and we have certain chains of stores in Maine that are run on this plan, namely The Great Atlantic & Pacific Tea Co. This means pay cash and wait on yourself as much as possible. Applied to our Farmers' Union it would mean pay cash for what you buy. Advise your Local Manager in time so he can pass them along to the Central Organization. For the past eighteen months, the work of the Farmers' Unions of Maine has been handicapped by regulations and changed business conditions, made necessary by the war. While the Central Organization is not supposed to be a money making corporation, it is necessary to have income enough to pay overhead charges and to carry some stock in trade in the warehouse certain times of year. For the last year, on account of war regulations, nearly all the income from sugar has been lost, and on account of the reduced demand for fertilizers, insecticides, fungicides and paints, the income from these sources have been greatly reduced, but now that the war is over and we are getting back to normal conditions, it is only necessary

for the members to show the same spirit of loyalty, patriotism, and confidence to their organization, that they have shown as American citizens to this greatest country on earth, in winning the war, and the future of the Farmers' Union of Maine will be assured.

A plan is now being worked out for a more uniform and efficient method of bookkeeping. We also believe that if this chain of 75 Union stores in Maine are to receive the full measure of success, there must be some system of inspection worked out along the line of District Managers, that exists in chains of stores all over the country. This is being worked out in co-operation with the Department of Agriculture and the Farmers' Union of Maine, and will be put in operation next year, and at this time the officers of the Farmers' Union have in mind, and are working out plans to establish a paper for the benefit of the Unions if the members show interest enough to warrant it. Like all Farmers' Organizations in this country, the Farmers' Union of Maine have found the buying of farm supplies for the farmers easier to work out than the selling of farm produce. In other words, trade seems more willing to receive money for merchandise than it is to pay out money for farm produce. An attempt was made the latter part of 1917 to start a distributing store in Boston, but owing to certain restrictions in trade, made necessary by the war, it was thought best to abandon this until times were more normal and G. M. Small, who had successfully managed it for a short time, went to work for a large commission house in Boston, with the understanding that when things got more normal, he might return and take up the work of this distributing house for the Farmers' Union. I think you will agree with me, and the Directors of the Farmers' Union also feel that this matter of establishing a market for the farmers' products of Maine, is of the first importance. This farmers' organization, with a few changes, will be on a good, firm, solid foundation, and sometime during the coming year, before another harvest, I am in hopes that the Bureau of Markets, in co-operation with the Farmers' Union of Maine, through some distributing house, owned by the Farmers' Union, or through some good reliable commission house that already exists, will be able to establish a more equitable and efficient market for the products of the farmers of Maine.

The New England Milk Producers' Association has had a very successful year and is now in a good sound, financial condition. I have not time to enumerate the different ways that this Association has been beneficial to the dairymen of Maine. It has standardized the business and enabled the dairymen to get a living price for their products. This Association has been recognized by all the state Governments in New England, also the Federal Government, as the official organ of the dairymen of New England, and during the trying times of the war, certain rules and regulations have been necessary. The Federal Milk Commission has been created by the Federal Food Administrator to fix the price of milk for the cities of New England. The producer would have been very much handicapped if he had not had this organization to represent him before this commission. In view of these well known facts, I cannot understand how any dairymen in Maine can refrain from joining this Association. As declared in the declaration of purposes of this organization, all the money that is paid into the Treasurer, over and above enough to take care of the overhead charges, shall be used to promote the dairy interests of New England. Last spring, in co-operation with the four large dealers in milk for the Boston market, a fund of \$10,000 was raised and turned over to the New England Milk Producers' Association, to be used in advertising the value of milk as a good, cheap, and healthy food. An elaborate campaign was carried out by the papers, dealers, and other methods, and Dr. Arthur W. Gilbert, the Executive Secretary of the Federal Milk Commission, said there was quite a marked increase in the consumption of milk, brought about by this advertising campaign, notwithstanding the fact that the price of milk had been constantly increasing. Sometime during the month of January, Richard Pattee, the Manager of the New England Milk Producers' Association, is coming into Maine and in co-operation with the Department of Agriculture will hold a series of meetings.

This has not been a very prosperous year in the activities of the Fruit Growers' Associations in Maine, owing partly to the light crop of apples in many sections of the state, the shortage of sugar, and the embargo on foreign shipments, made necessary by the war. All of these factors has had a tendency to restrict the apple market, but I believe that the outlook for the future

is good for the orchardist who takes good care of his trees. It is said that the irresponsible Hun amongst his other atrocities, has destroyed some of the best orchards in Europe, especially in France and Belgium. On account of the shortage of labor the past few years, there have been but few new orchards planted. Old orchards have been somewhat neglected, and I do not think that the production of apples is increasing in this country as fast as consumption.

In a market survey that was made of the cities of Maine and large towns the past summer, it was discovered that a large percentage of apples are brought from the West into Maine, and when the fruit dealers were asked why they handled Western Fruit in preference to the State of Maine, they unanimously gave two reasons. First, in the Western fruit they were assured of a good uniform grade and pack, and that they know just how many apples there are in a package, and that they are of uniform size and quality. Second, that with the Western fruit they can be assured of a continuous supply as long as the season lasts, conditions that can only be met through organizations. I believe that an effort should be made to organize Fruit Growers' Associations in all the orchard sections of Maine.

During the early part of the year, at the meeting of the Committee on Food Production, Donald F. Snow of Bangor, as chairman, appointed a Market Committee consisting of E. W. Hannaford, Portland; A. E. Nickerson, Portland; C. H. Bartlett, Bangor; Dr. Leon S. Merrill, University of Maine, Orono; Charles H. Gardner, President Farmers' Union, Waterville; C. O. Purinton, Lecturer, Maine State Grange, Bowdoinham; F. S. Adams, Department of Agriculture, Augusta; W. J. Conant, President, Fruit Growers' Exchange, Buckfield. I wish to acknowledge the valuable assistance rendered by this Committee, especially along the work of making a market survey of the markets of Maine in the cities and large villages. This survey will soon be tabulated and printed in the form of a bulletin.

Early in the year, through the offices of the Food Administrators of the different states, I obtained a list of the reliable commission merchants in the markets of the New England States and New York, that handle farm produce, namely, potatoes, apples, hay, wool, poultry, etc. This list we mailed to all the County Agents and different farmers' organizations in the state.



We now have this list on file in the office and send out information of this kind when called for.. Also, we learned from Mr. White, Chief, of the Bureau of Seed Inspection, that there would be quite an amount of certified seed potatoes for sale. I sent a circular letter to the Department of Agriculture in the different states that handle Maine seed potatoes, and states where I thought it might be possible to introduce our seed potatoes, asking for a list of reliable dealers in seed potatoes in these several states; also County Agents and Leaders of Boys' Clubs in these states. This list was tabulated and copy sent to all growers of certified seed potatoes in Maine, County Agents, Farmers' Union, and all local granges in the potato sections of Maine. After the harvest we sent circular letters to the different Departments of Agriculture, asking for estimates of production of the hay, potato and apple crop as compared with 1917, and prices they were selling for in different states. These returns have been tabulated and copies sent to all the Farmers' Organizations in the state and a copy to the press. We have tried to get in touch with the banking interests of Maine to get a more liberal credit for farmers and their organizations. Although there have been some improvements, it seems to be going slow at the present time, probably on account of the stringent money conditions caused by the war.

During the past year, I have organized eight Farmers' Unions; attended public meetings and meetings of directors and stockholders of thirty Farmers' Unions, with an average attendance of thirty-five; twenty Milk Producers' Associations meetings, with an average attendance of twenty-two; eight Pomona Granges, with an average attendance of 115; twenty Local Granges, with an average attendance of fifty-six; six Market Institutes, with an average attendance of sixty; also ten other meetings, with an average attendance of seventy. The same as last year, I served on the State Committee of Food Production, until the Committee was dissolved at the time the armistice was declared, and in August of this year was appointed by the Agricultural Department at Washington, by the consent of the War Department, Agricultural Advisor for the District Exemption Board No. 1, and served in this capacity until the armistice no longer made the office necessary. I wish to acknowledge the valuable assistance received from the granges all over Maine,

always willing to open their hall for meetings and do everything possible to help other kindred farmers' organizations, namely Farmers' Unions, Milk Producers' Associations, and Fruit Growers' Organizations. Without this helpful co-operation the marked progress that has been made in the state the past few years, would never have been accomplished. The watchword now all over the world is "co-operation". By co-operation the allies won the war; by co-operation we accomplished in this country what seemed impossible in mobilizing our forces and helping in the great conflict just closed; and by co-operation among the farmers of Maine, instead of competition, they can make Maine a great agricultural state, peopled by a happy and prosperous farming community.

I close this report with an extract from Ex-President Roosevelt's speech, delivered last summer at Springfield, Massachusetts.

"If the farmers of today don't adopt the resources of modern science and modern business, they can't hold their own in the world of today. If the farmer leaves it to the business man to organize, if he leaves it with the wage workers of the great cities to organize, then he will go down. Unorganized man under modern conditions cannot stand by himself, hold his own against his fellows who organize, and I think myself that the duty of organizing is even more important than the duty of taking the advantage of modern scientific methods. If a farmer always sells at wholesale price and purchases at retail price, he won't make a success of his business."

Respectfully submitted,

FRANK S. ADAMS,

*Chief, Bureau of Markets.*

REPORT OF THE CHIEF OF THE BUREAU OF INSPECTION ON THE ENFORCEMENT OF THE PURE FOOD LAW.

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*To the Hon. John A. Roberts, Commissioner of Agriculture:*

I have the honor to submit to you a report of the work accomplished by the Bureau of Inspection during the year 1918.

The work of the Bureau of Inspection is rather definitely defined and outlined in chapter thirty-six of the Revised Statutes of 1916; it includes the enforcement of the law regulating the sale of agricultural seeds, commercial feeding stuffs, commercial fertilizers, drugs, foods, fungicides and insecticides, together with the annual registration of commercial feeding stuffs, commercial fertilizers, fungicides and insecticides. As in 1917, the conditions which have disturbed every industry and all business have been fully sensed in the inspection work: In the case of agricultural seeds, impaired transportation facilities and the unusual demands, owing to the exhortations for increased production, brought about a difficult situation, and it has seemed more imperative than ever before that adequate protection should be afforded to every user of seed in the State of Maine. A very complete inspection has also been necessary in the matter of feeding stuffs; unusual products for human consumption having been manufactured, we have encountered varieties of commercial feeding stuffs upon the market that have hitherto been uncollected and analyzed, and with the cry of "Substitute," great vigilance has been necessary. In the fertilizer situation, very sensitive relations between the products used in fertilizer ingredients and those necessary for the manufacture of munitions obtain, and this, too, has been an added cause for great care in the inspection work. With the whole food situation disturbed and because of high prices, the temptation to adulterate and substitute has been difficult to withstand. Throughout the year more than ordinary activity along the lines

of food inspection has been maintained, the policy of this bureau having been to co-operate with all other existing agencies such as the Federal Bureau of Chemistry, the College of Agriculture, the College Extension Work, and the Food Administration; in fact, the inspectors have been given direct authorization from the Federal Food Administration, with full authority to act. Because a certain proportion of the products put out by the food factories of the state was to be used by our army and navy, food factory inspection has been maintained, especially in the sardine factories, corn factories, and, in fact, in any establishment where foods were packed to any extent. The inspection of slaughter houses, began in 1917, in co-operation with the Federal Bureau of Animal Industry, has been continued.

It is with considerable pleasure we report that, in spite of the multiplicity of regulations, and the high tension under which the people have been manufacturing or dispensing food, we believe the restrictions—made under the authority of the statute—have in general been accepted cheerfully and willingly by the dealers.

Although our inspection force have sent their share of men into military service, and those remaining have been called upon to take up special lines of work in addition to their regular inspection duties, the state has been well covered, the following figures indicating something of what has been accomplished:

Number of cities and towns inspected . . . . .	223
Total population of towns inspected . . . . .	579,444

#### SEED INSPECTION.

For the collection of samples of agricultural seeds and observations concerning the manner in which the statute was being obeyed, a seed analyst of long training was fortunately employed, and the result has been most gratifying. Most of the dealers visited were apparently trying hard to comply with the rules and regulations and were displaying their seeds with the proper percentage of purity marked upon the receptacle. As in previous years, however, considerable uncertainty was found to exist among them concerning the regulations for dispensing seed, oats, barley and corn, which in reality should be

marked with the percentage of purity as fully and definitely as timothy, red top and clover. Considering the number of years this statute has been in force, it seems only right that its workings should be carefully observed. There is a possibility that some additions should be made to the present law regulating the sale of agricultural seeds, providing for a germination guaranty as well as the percentage of purity and, with your permission, such legislation will probably be presented for consideration at the coming session of the legislature.

Number of towns inspected .....	79
Number of samples .....	109
Number of hearings .....	3

#### FEEDING STUFFS INSPECTION.

The feeding stuffs inspection for the year 1918 was conducted with extreme precision and care until late in the summer, when our regular feeding stuffs inspector was inducted into military service. Since August, reports of adulterated cotton seed meals, or of other violation of the law, have been assigned to our general inspector for investigation. Bearing in mind the many complications arising in the manufacture and transportation of feeding stuffs as a result of the war, we have at all times endeavored to be as tolerant as we could, actuated by the desire to impress upon the feed manufacturers and dealers located within and beyond the borders of Maine, the fact of our willingness to co-operate with them in facilitating business whenever consistent with the feeding stuffs laws of the state. It is our belief that the brands which we found upon analysis to be below standard were, with but few exceptions, unintentionally so on the part of the manufacturers. If difficulties arose with products entering into interstate shipment, and the situation warranted such action, the cases were referred to the Federal Department, and our recommendations to the United States Bureau of Chemistry, made upon the strength of our collaborating official's commission, were always met in a direct and courteous manner which encouraged us in our co-operative work.

The following table briefly outlines the scope of our work with relation to feeding stuffs:

Number of brands registered .....	593
Number of samples taken .....	247
Number of hearings .....	42
Interstate cases recommended .....	14
Seizures .....	1

#### FERTILIZER INSPECTION.

With the exception that fewer samples were obtained than have heretofore been taken, the fertilizer inspection work progressed very similarly to previous years, samples have been obtained both from storehouses and agents, as well as from the goods in the hands of the individual farmers; and the samples thus obtained were sent to the experiment station, without any information as to the character of the goods, for analysis. In spite of the disturbed fertilizer situation and the particularly arduous work of manufacturing from products obtained from so many different sources, the results of this sampling were rather satisfactory when we consider that no industry has been more affected by the war than the fertilizer interests, the ingredients entering into the manufacture of fertilizer having been demanded for the manufacture of munitions.

Court proceedings against one concern were necessary: This was the action brought against the Nature's Plant Food Company, located at Rumford, with a plant at Byron, Maine. Sufficient evidence having been secured to the effect that the product was being sold in Aroostook County contrary to the statute, that is, without having been registered (registration having been denied on the grounds that the label on the product was false and misleading), the agent of the company in that county was also brought into court. In both instances the respondents were found guilty and the cases were referred to the higher court in the respective counties and will be brought to trial in 1919.

As a result of complaints received from correspondents who have submitted samples of fertilizer for analysis, it was necessary for us to definitely investigate certain fertilizers sold in the

vicinity of Lincoln and Winn, manufactured by the Bowker Fertilizer Company. This matter is still under consideration, no definite settlement having been reached.

While the number of samples collected, as stated above, is not as large as last year, we were gratified with the number received from correspondents for analysis. This practice greatly broadens the scope of our inspections, and we have constantly urged it with the hope that it might inspire confidence on the part of the farmer in the willingness of the department to cooperate with him.

Number of brands registered .....	275
Number of towns inspected .....	42
Number of samples drawn .....	286
Number of correspondents' samples .....	15

#### FUNGICIDES AND INSECTICIDES.

The inspection of fungicides and insecticides was continued as usual during two of the spring months when such products as Bordeaux mixture, arsenate of lead, Paris green, etc., are sold for spraying purposes. Information was also secured by the inspectors concerning the sale of unregistered goods. This phase of the statute, however, is growing to be better understood, and probably less difficulty in arranging registrations was experienced in 1918 than heretofore. As practically no other state in the Union has a similar law, the insecticide law of Maine receives frequent criticism as to its constitutionality, and while up to the present time the work has been largely educational, it is probably desirable to have the legality of the law tested and interpreted by the courts. If any change should be made in the statute, the recommendation we have to offer is that, whereas the law now provides for the registration of materials composed of organic origin without payment of fee, it be altered to exempt such products entirely from registration.

Not a great number of samples were obtained, but these were found to be entirely in accordance with their guarantees.

Number of brands registered .....	268
Towns inspected .....	69
Samples collected .....	22

DRUG INSPECTION.

The drug inspection work has been performed in a particularly efficient manner, the inspection having been accomplished by a registered pharmacist who has served in the dual capacity of sanitary inspector of ice cream saloons, and soda fountain establishments, outside of the fountains found in the drug stores coming under his observation along with his other line of work.

Not a large number of samples was obtained, as a very complete sampling was performed in 1917.

Number of towns inspected .....	110
Number of samples collected .....	115

FOOD INSPECTION.

Living under the second year of the country at war, and with the urgent appeal of the Food Administrator of the Federal Government advocating substitutes on one hand and economy on the other, the temptation became great on the part of some manufacturers and local dealers to carry substitution even beyond the degree recommended, until their action might well be construed as adulteration; the value of a law to prevent fraud and to insure a square deal to the consumer has, therefore, been realized as never before.

As previously explained we were fortunately able, by co-operating with the Federal Food Administrator, to broaden the scope of our food inspection, inasmuch as we were closely allied with the sixteen county food administrators, and the local administrators in many of the towns in the state; also by the authority of the Food Administration being conferred on each deputy of the department, so that while the burden of enforcement was greatly increased, we feel like saying, without any fear of contradiction, that the state in this particular feature of the law's enforcement was well policed.

Number of towns inspected .....	207
Number of samples collected .....	212
Number of hearings .....	36



*Grocery Stores and Markets:* Especially with grocery stores and markets, the ordinary regulations providing for inspection were completely revolutionized by orders of the Food Administration, but, as stated before, we have fortunately been in complete touch with the situation through the authority granted by the Federal Food Administrator. Dealers have been very willing, although hampered in many instances by a multiplicity of regulations, to agree most readily to the recommendations made by our deputies as to sanitation and proper protection of the food which they dispense.

Prominent among our prosecutions and recommendations for federal procedure was a flagrant violation of the law for selling adulterated olive oil by a Bangor concern. As a result of this investigation, a wide-spread canvass was made of the state.

*Clams and Oysters:* Although not a great number of samples was collected, as is our usual custom at the proper time of year samples were taken. With the increase of prices and opportunities for adulteration of all classes of food, there is always need of checking up on the practice of substitution of water in clams and oysters.

*Hotels and Restaurants:* By means of an automobile, the inspection of many hotels and restaurants, particularly at the busy time of year, was possible, and a careful investigation was made of kitchens and dining rooms, with special reference to dishes, cooking utensils, the health of employees, and general sanitary conditions. In this work we have co-operated in the fullest manner with the State Department of Health. The United States Shipping Board of the Emergency Fleet Corporation, realizing the congested situation in certain localities because of emergency ship building operations, have attempted to investigate living conditions in these centers of industry. Almost immediately upon their arrival in the state, the officers from this Board conferred with the Department and perfected a system of co-operation between their organization, the Department of Health and the Bureau of Inspection. The work was carried on with very satisfactory results, particularly in the City of Bath, where the population has nearly double the last year and a half. In fact, the bureau has attempted to co-operate

with all other agencies—emergency or stable—but at the same time has endeavored to avoid duplication.

*Bakeries:* Inspection work among bakers was followed out along the usual lines, but with probably less vigilance than at any other time during the last four or five years because of the fact that the bakers, owing to the character of their business, were particularly subjected to Food Administration rules and regulations necessary for conservation.

*Bottling Establishments:* Because of frequent reports from other state officials similarly charged with the duty of enforcing food and drug laws, and from rumors of competition, it was necessary to obtain samples of bottled sodas to investigate the possibility that adulteration had occurred through the use of saccharin. Although numerous samples were analyzed, not the least adulteration was detected in this state. Our recommendations have been as usual, and the installation of soakers for sterilizing bottles has been urged but we have, of course, been influenced by the disturbed conditions under which the manufacturers are living, owing to the war. With the war over, this business should come in for its full share of regulations and it is recommended that, either by regulation or by statute, it should be made necessary that only sterilized containers may be used for food products where there is such danger of contamination and where, owing to the small place bottled goods occupy so far as nutrition is concerned, they are sold as a luxury.

*Slaughter House Inspection:* By the use of an automobile, it has been possible to inspect many of the smaller abattoirs located in isolated towns. There are a few well equipped, well managed establishments of this character in the state, but the majority of the slaughter houses in Maine,—especially in the small towns and villages,—are dilapidated buildings with wooden floors, and kept in a neglected condition. Without resorting to the courts, and by using moral suasion to its fullest degree, we have endeavored in every way possible to remedy the conditions and as a result of a rather complete inspection, combined with the information received in previous years, we are fully convinced,—and are therefore making the recommendations,—that some system of license should be inaugurated of all slaughter houses where commercial slaughtering is done, which would

certainly work to great advantage to all concerned. We trust this recommendation will be accepted and some legislation enacted at the coming session of the legislature.

*Food Factories:* In spite of the regulations surrounding food factories, emanating from the Food Administration, special endeavor was made to make as complete an inspection as possible of our three leading industries with reference to packing food, namely: Corn, blueberry and sardine factories. It has also been gratifying to note that new factories which are canning clams, mincemeat, squash, apples, and miscellaneous products, have made their appearance in different parts of the state during the last year. This, of course, has brought about necessary additional work as new managements are not familiar with old regulations and the education of such industries to the requirements of the department has been necessary.

Owing to the fact that a portion of the product of the corn and sardine factories was being taken by the Federal Government for overseas shipment, inspectors of the army and navy have visited the factories for the purpose of gathering first hand information as to the surroundings where the food for the soldiers and sailors was being prepared. This situation being learned, we attempted to avoid duplication of effort, but have in no instance neglected our inspection on this account, and have at all times enjoyed excellent co-operation with the National Cannery Association through their sardine section.

*Molasses:* For the first time in five years we have made quite a complete sampling of molasses. The results are most gratifying and, contrary to the general criticism on the part of the public to the effect that good molasses is not obtainable, our collection and analysis of samples have proven to the contrary, and of the samples taken only a small per cent. was found to be of an inferior quality.

#### NET WEIGHT LAW.

The enforcement of the net weight law has been prosecuted with the usual vigilance but in many instances has been more educational than otherwise. Although the statute is old enough, it has seemed that education should continue up to the present

time; this has also been the policy of the Federal Government, and the state statute is very similar to their's, differing only in that the *size* of the package defines its character in the Federal law. The Federal Department have now arrived at the time when they announce that drastic action will be taken against any misbranding of this nature and, with the high price of all food products, we appreciate the fact that we have such a statute for our protection. We recommend that the policy adopted from now on shall be similar to that of the Federal Government.

#### CO-OPERATIVE WORK.

Throughout the year we have been in the closest touch with the Federal Bureau of Chemistry, enjoying at all times the most complete co-operation, which has been distinctly of advantage in performing the food inspection at the different food factories. We have also had the advantage of the presence in the state for nearly a third of the year of a Federal inspector, who has worked consistently to raise the standard of our Maine products and has assisted in every way possible our inspectors in their work; all of which we have greatly appreciated.

#### PUBLICATIONS.

In the preparation of this report, we have endeavored to observe brevity, giving just the barest outline of the work involved in the registration of feeding stuffs, fertilizers, fungicides and insecticides, the collection of samples, interpretation of analyses, and the settlement of all cases against violators. For those who desire a more detailed account, it seems rather necessary to submit a list of the rules and regulations emanating from the Bureau of Inspection in the form of reports, regulatory announcements, and also publications containing the results of the analyses of the samples collected:

Official Inspections No. 66—Opened Shell Fish

67—Cream and Milk

68—Fungicides and Insecticides

- Official Inspections No. 69—Cream and Milk  
 70—Vinegar  
 71—Cream and Milk  
 72—Feeding Stuffs Inspection  
 73—Seed Inspection  
 74—Fertilizer Inspection  
 75—Fungicide and Insecticide Inspection  
 76—Ice Cream—Evaporated Milk  
 77—Flavoring Extracts and Spirits  
 78—Clams, Oysters and Scallops  
 79—Commercial Feeding Stuffs 1915-16  
 81—Commercial Agricultural Seeds 1916  
 82—Miscellaneous Drug Preparations  
 83—Maine Packed Blueberries, Corn and Sardines  
 84—Commercial Feeding Stuffs 1916-17  
 85—Commercial Fertilizers 1917  
 86—Commercial Agricultural Seeds 1917. Fungicides and Insecticides 1916-17  
 87—Miscellaneous Food Materials  
 88—Commercial Agricultural Seeds 1918  
 89—Commercial Feeding Stuffs 1918  
 90—Commercial Fertilizers 1918

- 1—Vol. XVI—Practical Suggestions Regarding Food Values and the Proper Selection of a Nutritious and Economical Diet

- Laws of Maine regulating the sale of:  
 Agricultural Seeds  
 Feeding Stuffs  
 Fertilizers  
 Drugs  
 Foods  
 Fungicides and Insecticides

Regulatory Announcement No. 125—Ice Cream
126—Protection of Foods
127—Net Weight
130—Shell Fish
135—Dressed Poultry

## RECOMMENDATIONS.

Under section thirty-five, chapter thirty-six, of the Revised Statutes, that is, a part of the statute under which this bureau is authorized to work, authority is given the Commissioner of Agriculture to make uniform rules and regulations and fix standards of purity, quality and strength, when standards are not specified or fixed by law concerning seeds, feeds, fertilizers, foods, drugs, and so on. This recommendation is made: That the authority thus granted and the opportunity offered be improved. The food standards have in no way been altered since the administration of the law was transferred from the experiment station to the state department, although from time to time they have been re-published over your signature, as authority for their use, and the standards promulgated by a previous administrator have been adopted as a whole. Some changes, however, are necessary and a new printing of these regulations should be made at the earliest opportunity. Owing to the chaotic food situation which we have experienced because of the war, we have purposely delayed, but there will be a great need for revised standards for use during the reconstruction period.

In conclusion, please accept my thanks for your kind advice, wise counsel, and hearty co-operation in the administration of the affairs assigned to me. I also wish at this time to express my appreciation of the valued assistance of my associates in the performance of our duties, and to thank the clerks and deputies who have labored with me. The co-operation of the other Departments of the State House and of the Federal Government has been of great value to me, and my gratitude to them is hereby acknowledged.

Respectfully submitted,

A. M. G. SOULE,  
*Chief, Bureau of Inspection.*

REPORT OF PROCEEDINGS  
OF THE  
MAINE DAIRYMEN'S ASSOCIATION  
AND  
MAINE SEED IMPROVEMENT ASSOCIATION

City Hall, Portland.

November 18-23, 1918.

Meeting opened, Monday Evening, November 18, by J. Henry Rines.

The Address of Welcome was given by Charles B. Clark, Mayor of Portland.

Dr. A. O. Thomas, State Superintendent of Schools, gave an address on "Rural Life and Rural Education."

BUSINESS MEETING OF MAINE DAIRYMEN'S  
ASSOCIATION

The annual meeting of the Maine Dairymen's Association was opened at 9.00 A.M. on Tuesday, November 19, 1918, by the president, L. C. Holston, who gave the annual address, as follows:

ANNUAL ADDRESS OF THE PRESIDENT

Probably the most noteworthy thing about the dairy business during the past year, was the failure of the dealers in reducing the price of milk last spring. Did you ever hear of such a thing before, and do you suppose such a thing would have happened if it had not been for the N. E. M. P. A.?

Fellow Dairymen we owe a debt of gratitude to the officers of the N. E. M. P. A. for making such a good fight for us with unfaltering devotion and against odds that few of us realize.

Every dairyman should be a member of the N. E. M. P. A.,

not only for a chance to show his appreciation, but as a man willing to do his bit and standing his part of looking after that end of his business for which he has no time, and as an individual no power. Is it fair that a few should bear the burden of the whole? Only town charges and, well, you know what class of individuals allow others to pay their way.

Dairymen, the time is coming when we have *got* to run the selling end of our business, as well as the producing end. Does the Standard Oil Co. allow some other corporations to look after the selling end of its business? Do they take what the dealers hand out to them, or in other words, who sets the price on oil? Is it good management for you and me to *allow* someone else to look after such an important end of our business? An organization of our interests is just as necessary to us, as it is to Armour & Co. So long as we fail to cooperate, just so long will our business be unorganized, and an unorganized business is one that nobody respects.

The dairy industry is one of tremendous national importance in that we are producers of a most necessary food. We cannot trust the consuming public, ignorant as it is of the necessity of this food and of the conditions and necessities of its production, to look after our interests. It is up to us.

We must inform and educate the public as to the value and necessity of dairy products as human food, and the necessity of the dairy cow for production of agriculture.

An organization is already started to do these very things. Are you willing to do your share to keep it alive and efficient?

My message to you is to urge—that you boost the milk business,—the business of producing that most essential single article of food the world needs and must have—*your business*.

Report of the acting secretary, H. M. Tucker.

Voted, to accept the report of the acting secretary.

Report of the treasurer, F. S. Adams.

Voted, to accept report of the treasurer.

The following committee on resolutions was appointed by the president: A. E. Hodges, W. G. Hunton, E. E. Harris.

The following committee on nominations was appointed by the president: R. L. Copeland, F. S. Adams, Dr. Chas. D. Woods.



Dr. Woods presented the report of the committee on herd books.

Voted, that this report be accepted.

Report of Dr. Pearl, for the committee on breeding, read by Dr. Woods.

*Mr. Adams:* I think it might be interesting for the Association to know in the absence of Dr. Pearl how this is to be carried on.

*Dr. Woods:* This work will be continued as part of the work of the biological department of the Maine Station. Dr. Pearl's work as the head of the department ceased last July, and he is now with us as collaborating biologist without salary, and we trust he will be with us as collaborating biologist for a good many years, although he will not have the active directive work. Dr. Surface, who is in charge of the statistical work of the Federal Food Administration at Washington is absent, but will return to us, we hope, as soon as the food problem of the world can be arranged. This conclusion of the war throws more upon the statistical division than while the war was in progress, because it is now up to America to feed not merely the allies, but all of Europe and part of Asia. I am not sure when Dr. Surface will be back, but I suggest that Dr. Pearl's resignation be accepted, which I am authorized to present to you and that you name Dr. Surface as his immediate successor.

Voted, that the report of the committee be accepted and placed on file.

Voted, that the resignation of Dr. Pearl be accepted.

Voted, that this committee be continued, that Dr. Pearl's place be taken by Dr. Surface, and that it be made a matter of record that the committee consist of Dr. Surface, Mr. Hunton and Mr. Adams.

Report of Delegate to the Federation of Agricultural Associations, L. C. Holston.

As a delegate to the Federation of Agricultural Associations I will make the report that we had our usual meeting, held at the college during Farmers' Week last spring. I believe there were only four Associations not represented. A good interest was shown by all these organizations and they practically all turned in their reports for the year. Professor Balentine was elected to the Hall of Fame tablet.

The delegate from the College of Agriculture was not present so that report was omitted.

A resolution was presented by Mr. Hunton relative to the next appropriation by the legislature for the maintenance of the experimental farms under the Experiment Station control.

Voted, that this resolution be referred to the committee on resolutions, to be acted upon at some business meeting of the organization before final adjournment.

*Mr. Adams:* I rise to ask a question,—make an inquiry. The Association I think went on record last year in favor of standardizing milk. I do not think it needs any argument to convince people that it is of the utmost importance to have a standard, not only in Maine but also all over New England. Milk in Boston ought to mean the same thing as milk in Portland. I want to know just what progress has been made. Our legislature will soon be in session. We are going to have a law passed to standardize milk. Are we going to back it by the action of the Maine Dairymen's Association? I do not remember just how we left it last year.

*President:* A committee was appointed to confer with Mr. Bradford. They have not had a meeting. The committee was made up of C. L. Jones of Corinna and F. H. Morse of Waterford.

*Secretary:* I think, Mr. President, it might be well for this Association to go on record as favoring this movement. The records will not show that this has been done and an effort will probably be made before the incoming legislature to show this Association as being behind the movement for standardization.

*Mr. Hunton:* I do not know about the committee, if they have not done anything, whether they still consider themselves an active committee. I move that the committee be instructed to continue.

The motion was duly carried.

*Secretary:* Mr. President, there is one matter that I wish to bring to the attention of this Association. It is a matter that I have had in mind for some time, and about which I have consulted with Mr. Roberts. We both thought that it would be very opportune to bring it up at this meeting and get an expression of the Dairymen's Association upon it. We all realize that something has to be done along the line of milk and dairy

inspection, and to that end the state has employed a State Dairy Inspector for a number of years. We have only employed one man, and one man covering the whole state of Maine in this line of work, cannot do anything more than touch the high places.

*Dr. Woods:* It is the low places we are after.

*Secretary:* You are right. We have tried to handle it somewhat by licensing the milk dealers, but no fee has been attached to this license. In other states there is a fee attached, and it does not seem to me as though the people who produce milk should be the ones to pay for this inspection. I believe that we should charge a fee of one dollar for that license, and if anyone is doing so small a business that he cannot afford to pay one dollar for a milk license, he ought to go out of business. Possibly there are a few that only keep one cow, and these one cow propositions are the worst we have to run up against. If they could be cut out it would be a mighty good thing, but there is no one that is in the milk business but what would be willing to pay a dollar. Now at the present time, or at least up to November 15, we had 5790 licenses in the State of Maine, and if we only charged a dollar you see that would bring in a pretty good working capital to do this inspection work with. I submit this for your consideration and your argument. I would like to have an expression of opinion in regard to this; that we try to get a bill through the next legislature to charge a fee of one dollar for a milk license, and use that to carry forward this work of milk and dairy inspection in the state. I would like to hear from a good number present on this question.

*Mr. Hunton:* I would like to ask under what conditions a man loses his license, with the license system?

*Mr. Roberts:* The present law does not make any provision for a man losing his license. We have in some cases. The present law hasn't any authority. It should have.

*Mr. Hunton:* May I ask one more question? It does not make any difference today how much a man abuses the public in the product which he sells, you have no means of controlling the license?

*Mr. Roberts:* Yes, we have. We can bring him into court. As a matter of fact we have assumed the authority of taking away the license, but if the matter should be brought into court

there would be some uncertainty whether we have that authority or not. Now we have a case which Mr. Tucker knows about in Lewiston, a Polander, the surroundings of whose business were exceedingly filthy. The dairy inspector went there and told him he must clean up. He told me since I came into the building, that he was there yesterday and the man had cleaned up. He was told that he would face a fine in court and that he would not be allowed to sell milk.

*Mr. Hunton:* Then there are certain occasions under which you revoke a license?

*Mr. Roberts:* Yes, we do it.

*Mr. Tucker:* Under the pure food law.

*Mr. Roberts:* Mr. Tucker has raised a very important point. During the last session of the legislature there were parties who sold milk who came to me and asked if I would not favor this proposition. At first it did not appeal to me at all, but as we have studied the situation we have come to this conclusion, that we would like to know what the opinion of the dairymen of the state is in this matter. It would be of considerable advantage, of course, to the department, if we had a license, that is if it was accepted by the dairymen of the state. We do not want to have a law of that kind passed if it is going to create antagonism, and I know of no way to have the matter settled, except to bring it before the gentlemen here to see what their opinion would be in the matter.

*Mr. Hunton:* I would like to ask Mr. Harris a question. Is there any such thing as creamery inspection by the state of Massachusetts.

*Mr. Harris:* Creameries are subject to the same inspection that the milkman is, and they take out a license the same as the milkmen.

*Prof. Corbett:* In other words, we want a law that will effect any man who sells milk at the present time, so that the public will be protected. We want a law that will effect every one that sells milk. If the farmer sells milk to the creamery, the creamery is protected through the license which the farmer must have. I think it would be rather difficult to charge a license fee in accordance with the business that the man does. I think a dollar fee is hardly a hardship, especially in these days. It only takes a few quarts of milk to pay that license, and if the

one cow can't stand that tax she isn't much of a cow. I believe that this law should read, that everyone who sells milk must have a license.

Adjourned until four o'clock in the afternoon.

*Adjourned Business Meeting.*

*President:* We will now open the business session and return to where we left off under the head of new business.

REPORT OF COMMITTEE ON RESOLUTIONS.

Resolved, that we are in favor of a law for the standardization of milk, and that the committee appointed by our president last year shall investigate and recommend to the next legislature a statute leading to such standardization.

Resolved, that we fully recognize and endorse the superior work accomplished by the New England Milk Producers' Association for the dairymen of Maine during the past year, and urge our entire membership to do everything possible to further the aims and objects of this organization.

Whereas, a movement is about to be started by the United States Department of Agriculture in regard to the development of farm lands during the period of reconstruction following the war.

Resolved, that this Association is in favor also of rehabilitating the land that has already been developed and is now lying idle in so many of the communities of our state.

Whereas, through the untiring efforts of the first president of this Association and its long time treasurer, Honorable Rutilus Alden, the legislature of 1909 passed an act appropriating money for the purchase of a farm, upon which the Maine Agricultural Experiment Station should conduct scientific investigations in orcharding and with corn and other agricultural plants.

Whereas, the investigations upon the breeding of oats, and other small grains, of beans, of corn and the long period studies in orchard growth, propagation and breeding conducted by the Station, are bringing results of such practical value that the

stopping of these studies would result in a great loss to the agriculture of the state.

Whereas, owing to the increased cost of materials and of men, the Federal Funds received by the Station are inadequate to the support of the present lines of work, and the studies at Highmoor Farm would have to be decreased or abandoned for lack of funds.

Resolved, that the Maine State Dairymen's Association wishes to place itself on record as endorsing the practical benefit that these investigations are bringing to Maine's agriculture, and that it hereby asks the legislature that shall convene in January next, to look into the needs for the continuance of the work at Highmoor Farm and make such appropriations as are needed to maintain it.

That the executive committee of this Association is hereby directed to work in cooperation with the committee from the Station Council, to bring these needs to the attention of the legislature and to assist in every lawful way to obtain suitable appropriations for the continuance of these investigations upon orcharding and farm crops.

Resolved, that this Association express its appreciation for the generous treatment accorded its members by the people of Portland, and the Portland Chamber of Commerce in our entertainment for the meeting; to those who offered special prizes for exhibits, and to all who have assisted in making the convention a success.

W. G. HUNTON,  
ELMER E. HARRIS,  
ALBERT E. HODGES,

*Committee.*

Voted, that the report of the committee be accepted and placed on file.

The nominating committee made its report, which it was voted to accept, and that the chairman of the nominating committee be instructed to cast one ballot for the officers named in the report.

The officers elected for the ensuing years were as follows:

*President:* L. C. Holston, Cornish.

*Vice President:* J. A. Ness, Auburn.

*Secretary:* H. M. Tucker, Yarmouthville.

*Treasurer:* F. S. Adams, Bowdoinham.

*Trustee:* L. E. McIntire, East Waterford.

*Member Experiment Station Council:* F. S. Adams, Bowdoinham.

*Delegates to Federation of Agricultural Associations:* L. C. Holston, Cornish; A. S. Pope, Manchester.

*Visitor to College of Agriculture:* W. C. Stetson, Waterville.

*Dr. Woods:* I would like to make a motion which I have made for the last two or three years, which has not had any effect whatsoever so far as I have been able to discover, that is, that our secretary be instructed to write a respectful letter to the members that are in arrears, requesting that they pay up their membership dues to this Association.

Motion was seconded, and voted accordingly.

Voted to adjourn.

*Secretary:* I wish to make announcement at this time in regard to our dairy judging contest held this afternoon. I made mention of this in our afternoon program and there were several contestants for the silver cup. N. H. Rich, Charleston, was the successful winner of the cup this year. C. M. White of Augusta was a close second.

Voted to adjourn.

## REPORT OF THE SECRETARY.

*To the Members of the Maine Dairymen's Association:*

The office of the Secretary of the Maine Dairymen's Association seems to have gone begging the past year. Brooks Brown, who was elected to fill this place at the last Annual Meeting, entered the service early in the year, and C. M. White was appointed to fill the vacancy. In May E. L. Newdick resigned his position in the Department of Agriculture and as Secretary of

the Seed Improvement Association, to enter the service and Mr. White was chosen to fill his place. Not feeling that he could be secretary to both Associations he resigned from our Association. Since that time there has been no one to fill this office. These facts probably account for the small number of membership fees and dues collected the past year.

Mr. Brown's books show that only twenty-five membership fees were collected last year, less than one-third the usual number. It is to be hoped that this will not happen again and that all old members and many new ones will respond this year. We not only need your dollar, but we want your help and co-operation in a good cause.

Two committee meetings were held last year. The first Executive Committee meeting was held in conjunction with the executive boards of the Seed Improvement Association and the Live Stock Breeders' Association. President L. C. Holston, and Commissioner J. A. Roberts, representing this organization. Committees were appointed at this meeting to arrange the time, place and program of the next Annual Convention. The committees met again at the Agricultural Rooms, Augusta, May 9th for final arrangements.

Respectfully submitted,

H. M. TUCKER,  
*Acting Secretary.*

## REPORT OF TREASURER.

### RECEIPTS.

1917		
Dec. 8,	Balance from 1917,	\$185.77
	26 membership dues,	26.00
	Money received from Brooks Brown for rent Machinery Hall,	25.00
1918		
Jan. 2,	Received from Brooks Brown, Sec., 29 membership dues,	29.00
Mch. 1,	Received for hall rent,	2.50



May 1,	Coupon from Liberty Bond,	2.00	
Nov. 1,	Coupon from Liberty Bond,	2.00	
	Interest on Deposit in Bank,	1.60	
			————— \$273.87

## EXPENDITURES.

1917			
Dec. 8,	Telegrams to Washington and Orono,	\$ 3.89	
	Paid Maine Farmer Pub. Co., ad- vertising Annual Meeting,	12.00	
	Paid Mr. Twitchell, Manager Madi- son Creamery, for six pounds of butter lost during exhibit at Annual Meeting,	2.82	
	Paid Lillian Washburn for four bottles lost at Annual Meeting,	.25	
1918			
Feb. 20,	Paid L. C. Holston, expense at- tending meeting of executive committee,	7.06	
	Paid dues Maine Federation of Agricultural Societies,	4.00	
May 1,	Paid for Ayrshire herd books,	66.00	
			————— \$96.02
	Unexpended balance,		————— \$177.85

Respectfully submitted,

F. S. ADAMS,  
*Treasurer.*

BUSINESS MEETING MAINE SEED IMPROVEMENT  
ASSOCIATION.

## ANNUAL ADDRESS OF THE PRESIDENT.

GUY C. PORTER.

We are assembled for the Ninth Annual Meeting of the Maine Seed Improvement Association. The events of last year have been governed to a large extent, by the progress of this great war, however we have endeavored to make some progress along the lines of seed improvement. During the year our secretary, Mr. Newdick, was called to the service and our treasurer, Mr. White, has since acted in that capacity.

Both these men have worked faithfully to make the influence of our Association felt in the state so that our farmers may know that improved seed means larger, better and more salable crops. It does not necessarily follow that all certified seed can be sold at a premium, because many different factors enter into the marketing of products. For instance, two years ago table stock was in such demand that it sold higher than seed stock. In order to get a premium for certified potatoes we must not only produce extra good seed, but we must convince the prospective customer that we have seed above the average.

With this end in view, it has occurred to me that we should take some steps to convince the farmers of the south that we are giving our fields a rigid inspection and that seed carrying the Blue Tag means a high yielding, clean seed, practically free from disease. There are so many factors which enter into the production of a crop that good seed does not always prove its true worth. One farmer may plant good certified seed under adverse conditions and secure a smaller crop than another who plants seed not nearly as good but under more favorable conditions.

One way to prove to the farmers of the south that we are

giving our fields a rigid inspection and are providing good seed, would be to have a representative from some southern growers Association assist our inspectors in the field. I have already had some correspondence with W. B. Duree, Secretary of the New Jersey Potato Association, relative to this. After giving Mr. Duree an outline of our plan I asked him if he thought it would be practicable for New Jersey to send some men to work with our men, his reply, "An inspection by a qualified New Jersey man would be a very good plan in my estimation. I will present your letter at our meeting of the State Executive Committee of the New Jersey State Potato Association, and I anticipate that they will take some action which will be of mutual benefit."

I hope that some definite plan may be arranged between our Association, through the Department of Agriculture, and some representative of the southern growers, so that they will have a way of knowing that our inspection is rigid and that certified seed is clean and free from disease, and not only more desirable but more valuable than any other seed. If we can prove to prospective buyers the true worth of certified seed they will be willing to pay a premium for same.

Our Association, representing an important branch of the farming interests of the state, must during the great reconstruction period upon which we are now entering, do its utmost to place the agricultural interests of the state upon a better basis and in no way can this be done better by careful attention to improved seed.

#### REPORT OF ACTING SECRETARY OF MAINE SEED IMPROVEMENT ASSOCIATION.

*Mr. President, Officers and Members of the Maine Seed Improvement Association:*

During 1918 the work of this Association, in connection with the Department of Agriculture, has made progress in the work of certifying seed under the Blue Tag method previously worked out.

On January 11, 1918, the Executive Committees of the Seed Improvement, Dairymen's and Livestock Breeders' Associations held a joint meeting at the Department of Agriculture. The

principle business transacted at this time was the appointment of a joint program committee, with authority to arrange the program for our 1918 Annual Meeting, and, if possible, unite with the Pomological Society for a joint exhibition in Portland. As you know the efforts of your Committee have met with signal success. Representatives from all the Associations participating in this convention met on May 9th and perfected plans for the combined meetings. On May 15th your efficient secretary, E. L. Newdick, entered the Officers' Training School of the U. S. Army, completing the course with credit and is now a Lieutenant in the American Army. The work of the Association has missed Lieutenant Newdick's experience and knowledge, and the loss is offset only by the pride we all take in this true American spirit which is making the world a better place in which to live.

After lengthy correspondence and consultation with your Executive Committee, requirements for certified corn and beans were drawn up as follows:—

REQUIREMENTS FOR GROWING CERTIFIED BEANS.  
MAINE DEPARTMENT OF AGRICULTURE AND  
MAINE SEED IMPROVEMENT ASSOCIATION  
COOPERATING.

1. Seed true to name.  
See Maine Agricultural Experiment Station Bulletin 239 as to true type of Yellow Eye Beans.
2. Seed free from evidence of anthracnose.
3. To be examined by an agent of the Department of Agriculture or Maine Seed Improvement Association at least twice; once after the pods form and again before the shipment of seed.
4. Evidence of anthracnose on the pods disqualifies. A yield of less than 20 bushels per acre disqualifies. Seed less than 95% true to type disqualifies.
5. All beans bright in color, carefully graded and hand picked before offering for sale.

## B. GRADE.

To be same as blue tag except there may be a tolerance of 1% of plants affected with anthracnose and the pods only slightly affected in this case. Seed itself unaffected.

## COST.

Fifty cents per acre for entry fee. \$1.00 per acre for field inspection and two cents per bushel for shipping inspection.

## REQUIREMENTS FOR GROWING CERTIFIED FLINT CORN.

MAINE DEPARTMENT OF AGRICULTURE AND MAINE  
SEED IMPROVEMENT ASSOCIATION  
COOPERATING.

1. True to type designated. Straight ears uniform in shape and size. Good length for variety. Tip well filled. Kernels to be broad, deep, slightly wedge shape, and fairly well rounded. Rows to be straight and firmly set on the cob.
2. Well matured to insure vigorous seedlings.
3. Yield of less than 70 bushels on cob or 58 bushels shelled corn per acre disqualifies. In other words 17% shrinkage allowed for shelling crib dry corn.
4. The proportion of cob to kernel and germination to be determined under direction of M. S. I. A. from typical samples of the corn taken at the last inspection. The germination and per acre yield to be stated on the blue tag.
5. To be inspected at least twice by a representative of the Department of Agriculture or M. S. I. A. Once after glazing and once before shipment of seed.

## COST.

Fifty cents per acre for entry fee. \$1.00 per acre for field inspection and two cents per bushel for shipping inspection.

They are now submitted for your consideration and what alterations may seem necessary.

Following is a report of the receipts and expenditures of the entry and inspection fees as received.

Received on 1917 account,	\$150.25
Received on 1918 account,	606.50
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Total receipts,	\$756.75
Paid for inspectors, as per vouchers,	\$665.71
Paid for miscellaneous,	9.75
Cash on hand,	82.29
Amount due from inspection fees,	404.15

It is hoped that with the return of normal conditions we shall accumulate a revolving fund to meet bills as they become due, and not ask the inspectors to wait so long for their pay.

Since our last Annual Meeting the scarcity of labor, fertilizer and seed with high prices for all has sharply reminded the business farmer that the Blue Tag method of guaranteeing seed is correct. The acreage of potatoes entered was 58 per cent more than 1917, or 537 acres and 18 acres of oats; 352½ acres of potatoes and 11 of oats passed both field inspections at a cost of \$1399.64. This means that it has cost \$3.84 to find an acre which is worthy of the Blue Tag. If this cost was divided over the entire acreage receiving the inspection it would only amount to \$2.52 per acre. Thirty-five per cent of the total entries for the Blue Tag have been disqualified, largely on account of mosaic and varietal mixtures.

The field inspection work in Aroostook county has been under Mr. Porter's direction, with C. A. Stetson of Caribou as head inspector, assisted by A. H. Tuck, R. S. Greenwood and E. E. Lovely. In central Maine your Secretary and C. M. Leavitt of Augusta have done all the field work. Mr. Stetson and Mr. Leavitt are both valuable men by reason of farm experience.

As the seed improvement work has developed from the original method of precise experimental system to a more practical commercial plan, it soon became clear that if the grower of certified seed was to receive direct financial benefit it was only fair that he bear a part, at least, of the cost of inspection. The present fee system was then developed to make the work self sustaining. One problem leads to another and this was no excep-

tion. Seventeen per cent of the acreage was disqualified in 1916, 25 per cent in 1917 and 35 per cent in 1918. The present fees will not cover the cost of inspection unless applied to all entries whether disqualified or not. This is impractical, as the disqualified grower feels he has received no direct benefit from this inspection. It is equally impractical to charge more than cost to those passing the field inspections as they object to paying the "other fellow's" bills. It is, therefore, recommended that in so far as this is a direct benefit to the entire state in raising the per acre yield of staple food products in a thoroughly practical and efficient manner, the Association should take energetic measures for having the appropriation increased at least \$1,000, to still further extend the work to other staple crops, such as wheat, corn and beans. Second, in view of the damage done by anthracnose to our bean crop the last few years a special effort should be made to certify disease resisting strains for a wider distribution throughout the state to replace that now used which is affected by anthracnose. The Experiment Station has been working for several years in developing strains of the old fashioned and improved yellow eye beans which are true to type and disease resistant. The past year they had an excellent piece of the old fashioned type at Highmoor and Dr. Woods has suggested that this seed be distributed by the Maine Seed Improvement Association. Already several growers are in view to take up this work and it should be pushed vigorously. Third, the acreage of wheat in Maine has been doubled in 1918 over that of 1917. This Association will do well to cooperate with the Experiment Station in their efforts to develop and distribute good milling wheat adapted to Maine conditions; and last with the value of the work becoming better understood and appreciated by purchasers of seed outside the state, in our anxiety to fill the demand and make a commercial success the foundation of permanent success must be kept clearly in mind, that is to keep the best of our certified seed at home for next year's planting. With all the present day difficulties in crop production it is unsafe to take chances with second grade seed.

Since reaching Portland a letter has come from Mr. Newdick from which allow me to quote as follows: "Permit me to suggest to you, that in your position you should take a great lead in getting returning soldiers on to Maine farms and I hope some

resolutions as passed at your meeting which will encourage Senators Hale and Fernald to do all in their power to have the Government recognize Maine soil and Maine conditions as ideal for the purpose."

Under present unsettled conditions of the Maine farmer it is highly important that this matter receive our thoughtful attention. It is a plain question of business. Shall our Government spend money recklessly in reclaiming cut over timber, swamp and arid lands thereby adding a needless burden of debt to that already incurred by our Government. Or, shall a systematic effort be made to cultivate the thousands of acres that are idle and unproductive in the New England States by a liberal system of loans by the Government which will enable those who wish to take up farming under favorable conditions? Are we here in Maine large enough for the job?

That the eight years of educational work of the Maine Seed Improvement Association has borne abundant fruit is well shown in this year's exhibition made by 116 individuals and comprising 261 exhibits. A great deal of credit is due the Extension men who have so ably arranged the show.

Suggestions and plans for a more aggressive and efficient policy for the coming year will be welcomed from this Association.

Respectfully submitted,

C. M. WHITE,  
*Acting Secretary.*

Voted, that the report of the secretary be accepted.

#### REPORT OF TREASURER.

##### RECEIPTS.

	Cash on hand, last report,	\$77.12
1917		
Dec. 5,	Received from F. S. Adams, Association's share of 1916 Augusta Chamber of Commerce stipend,	20.72
1918		
Jan. 22,	Received from E. L. Newdick, Secretary,	25.00



Feb. 19,	Interest to Nov. 1, 1917,	2.49
	Feb. 1, 1918,	.81
May 6,	Received from E. L. Newdick, Secretary, Dues 1917-1918,	28.00
		<hr/>
		\$154.14

## EXPENDITURES.

1917		
Dec. 5,	Frank Lowell, expenses to Orono, March 5, 1917,	\$ 6.40
1918		
Jan. 30,	N. H. Rich, expenses to Ex. Com. meetings, Augusta, Jan. 11, 1918,	6.80
Feb. 2,	Maine Federation of Agricultural Associa- tions, 1917-1918 dues,	4.00
Nov. 20,	100 badges for Annual Meeting,	12.00
	Cash on hand, November, 1918,	124.94
		<hr/>
		\$154.14

Respectfully submitted,

C. M. WHITE,  
*Treasurer.*

Voted, that the report of the treasurer be accepted.

Voted, that the president be instructed to appoint a committee on resolutions and a committee on nominations. The following appointments were made:

Nominating Committee: Chas. D. Woods, R. L. Copeland, John A. Roberts.

Committee on Resolutions: A. E. Hodges, Fred P. Loring, J. L. Scribner.

*Secretary:* I would like to hear from Dr. Woods relative to his plans for beans.

*Dr. Woods:* We have developed out of a good many selections some half dozen strains of improved yellow eye. We have a small amount of seed of two of the improved yellow eye types and three of the straight yellow eye, which we would like to place either through this Association or the county agents, with

growers of beans in the state who will grow them under certain conditions. That is, they will agree to give them good cultivation and not plant them near other beans so that there will be danger of the bumblebees crossing them, and at the end of the growing season send specimens of their crop to the Station. If the Station approves them as being all right they will agree to sell them for seed for use in 1920, either through the Experiment Station or in other ways which seem to be best. Our idea is to price this seed at thirty cents a pound and give the growers who fulfil these conditions a rebate of fifty per cent on their purchase price when they make their report to us. It might seem as though we ought to do it the other way round and sell this seed at a lower price than we would otherwise, but that puts the laboring oar on us and we would rather leave the laboring oar on the fellow that has bought the seed. We want to distribute this seed very widely and I think we will have to restrict the amount to 100 pounds that any one grower could have, because we would like to try it out under as many conditions as practicable. We also have a limited amount of yellow eye beans, short runner type, the only yellow eye bean that we have ever happened to find that had any runner characteristics. It matured well at Highmoor Farm. One of the runner type is likely to give us a larger yield than any beans of the ordinary bush type. This is the only straight yellow eye that we have ever seen with that particular feature. You can see the general types of this seed downstairs with the Station exhibit, and also the circulars describing the way we are willing to put out this seed. We will have in addition to this quite a lot of improved yellow eye seed that we are not ready to assign a line number to, which is a good deal better than any improved yellow eye bean seed you can find in the market and that we are ready to pass on at the ordinary market price.

I would like to say one thing, if I may, about the matter of price. The Station is not in this to make any money whatever. On the other hand, it is not fair to the growers of pure seed for the Station to sell the seed at a price less than a commercial grower could afford to sell. We are constantly figuring as to where we can put a price of seed that will place it in the hands

of every grower that wants it, and yet be high enough to protect the grower of pure seed so that the state would not find itself in unfair competition. A gentleman, who is a writer for one of the agricultural papers of the state, will come out with an article this week or next describing the Experiment Station exhibit and saying that this seed ought to be distributed free among the citizens of the state. I don't believe so. Not that the amount of money we get from it amounts to anything, but I do not believe that is the right principle. I think the proper principle is to distribute this seed, that is merely a commercial work like Maine 340 oats, at a price such as Mr. Copeland could afford to grow his particular strain and we not be in unfair competition with him. I hope this strain of beans will be given a good try out. One thing I ought to say is that these beans were not free from anthracnose. We had a bad year for anthracnose at Highmoor Farm partly in view of the weakened condition of the plants that came from a late frost. After the plants were well up they were badly injured, and the yields this year were lighter than they would have been except for that. For the general selections a price of thirty cents a pound, sixty cents a quart, \$18 a bushel, or thereabout, and I think that most anybody could afford to grow seed at that price.

It is quite an embarrassing thing to know what to do in regard to hand picking. Even the small amount we have downstairs, in order to get those thoroughly cleaned in such a way that we would be willing to send them out for seed, a man could not handle much more than a bushel and a half a day. I am rather in hopes that we can work in the children there in Monmouth so as to get the seed worked over in that way, but we do not intend to send out a single imperfect bean seed. While these were threshed and handled by machinery as far as could be, the final sorting has to be done by hand and I doubt if any man, had the bean seed been given to him, could afford to sell it much less than \$18 a bushel when he got it cleaned.

When the treasurer made his report he stated that the inspectors were delayed in receiving their pay. We have a balance that is in other funds, and I wondered if it would not be possible to make some arrangements whereby the treasurer could borrow temporarily from the funds of the Association to use for these payments; that is, he could have two sets of books and

one bank deposit. Do you see what I mean? At the University this plan is followed. The Station funds are absolutely distinct from the University funds, but only one bank deposit is used. If the Station happens to have more funds than it is using the University can draw from it and vice versa. So that we have these two accounts with one bank deposit. It might be possible for the treasurer to use temporarily these funds of the Association that otherwise are lying idle or drawing a very small amount of interest. We are not playing a square game with our inspectors. Would any action be necessary for that, Mr. White?

*Mr. White:* I presume there would. I am glad Dr. Woods has spoken of that because personally I felt a little embarrassed to ask these fellows to do the work and have to wait so long.

*Mr. Copeland:* It occurs to me that if the Department or members of our Association would go to some practical farmer, or a number of them and put up a proposition that they enter into this growing of beans for certification, and that they grow a certain number of acres if possible, then select the type that you want for planting, the inspection would come all at one time, the same expense, and it would be much more satisfactory. You could have one universal type and the customer would know what he was getting. I came in contact with this with one seed man in Bangor. He says, "No, we get all our beans, I think, from Indiana. We get any quantity that we want, strictly of one type, and catalogue them. A man comes in and gets some beans. He may want a few more to finish out that season and he gets the same thing, or if he comes the next season and orders the same thing he gets it." My idea would be that we adopt some particular type, it could be known as the Seed Improvement Bean, and have a certain few growers who would devote their time and their energy to that line, and when the Blue Tag comes out and this sort is ordered from the seed store or otherwise, when they send the next year they will be sure of getting the same seed and they will be willing to pay for it. I know that, for I have had some experience along this line. I have put out Blue Tag seed. The first year I put on the Blue Tag carefully and sealed up every bag. The next year when I asked the man if he wanted the Blue Tag seed, he said, "yes" and gave me ten cents more a bushel. I know customers who

have been to a different store and inquired for the same seed. That is the position we want to get our Association in, so that customers will demand the Blue Tag, and the price does not matter. The trouble is I cannot furnish enough seed where it is established and known. The only difficulty is we need more volume. The stock is all cleaned out the first of April and we have a lot of orders that we have to send back. There is no question of price, the seed men can take care of that, I guess. The idea is we want to get the standard of the goods so that the price will not matter in comparison with the quality.

In regard to seed corn I think the same thing should be adopted. We have now arranged three zones, northern, central and southern. It would not do to carry seed from the southern to the northern, you would not get satisfactory results. Would it not be well for someone in our Association or the Department to go to a man in the southern zone, for instance, and say, "if you will make a specialty of this particular line with a view of supplying people in your zone we will make it worth your while. We want a good type and a good seed. If you are able to supply it the financial end of it will be taken care of all right." I would suggest having a man in the southern, central and northern zones to grow seed corn, and only a few to grow beans. We cannot all grow certified seed. I would not save a potato for seed if I was sure of getting certified seed true to name and free from disease that cost say twenty-five cents a bushel above ordinary stock. My money would be well expended in buying certified seed.

*President:* The same point has been made by Mr. Copeland and Mr. White, and it is a point that we want emphasized, that is to get our own people to using certified seed of all kinds. We are apt to think, especially people who are interested in potatoes, about shipping our certified seed out of the state, and we ought to think more about keeping enough of it at home for our own farms and getting it well distributed throughout the state.

*Mr. Copeland:* In regard to the seed Dr. Woods has spoken about I do not know where we could get a better start than to take this seed they recommend. It appeals to me at once that if our Association could make arrangements to place a certain amount of this seed, we should have all one type then and know

just what we were getting, and where could we get a better source of supply than that for export.

*Dr. Woods:* These types were not decided by us arbitrarily; we selected seed grown in Maine and sent to the Boston Chamber of Commerce and handlers of yellow eye and improved yellow eye beans in that city. They selected the ones that they regarded as ideal and we fixed that type. Bulletin 239 referred to in the report of the secretary contains a colored photograph of a reproduction in color of just that bean, and we have the same bean downstairs. That was what we worked toward, not the ideal established by the Station but the ideal established by the Boston market conditions.

*President:* It seems to me that if, through our Association, we might take seed from the Experiment Station, the seed beans, seed oats, and distribute it throughout the state we would be accomplishing something of real benefit to our own people.

*Dr. Woods:* We have five strains of oats this year amounting to somewhere round five bushels each that apparently are going to be better than Maine 340. There being only small amounts of them, we would like to have them tried in two or three places, a bushel or two by a grocer, with the idea that he shall keep them clean so that if they prove to be what we think they are, they can be multiplied and worked in competition with and actually supplant Maine 340, if they are much better as our small trials seem to indicate.

*President:* Is there any action to be taken on the suggestions made by the gentlemen who have just spoken?

*Secretary:* How can we get at a definite plan any better than to have the discussion referred to the Committee on Resolutions. It seems to me it would help a great deal, when Mr. Newdick comes back if he knew what types of beans and what types of corn we ought to start with for certified seed. Brother Copeland is right. What little I have been around over the state, every community has a local bean, and while it is nice in that particular market, if they started to grow it on a commercial basis and had 50 or 75 bushels on hand they could not find a market. Let us try to start right so when our growers get the seed well disseminated there will be a market for it in a commercial way.

*Dr. Woods:* How would it be to refer the whole matter with power to act to the Executive Committee?

*Secretary:* I think it would be a good idea.

*Dr. Woods:* I move that the matter referred to in this discussion relative to the fixing of types of seed be referred to the Executive Committee with power to act.

So voted.

*Mr. Rich:* A matter came up with the judges a day or two ago in regard to one man making two entries in the same class, whether he should get two prizes if his specimens were worthy of prizes. There is nothing in the premium list about this and the judges did not know just what to do. They came to the Executive Committee and inquired what to do and we remembered that two or three years ago the same thing came up and two prizes were given to the same man in one class where he made two entries, and the judges wished me to bring this up at this meeting and have the Association take some action on the matter.

*Dr. Woods:* On the same exhibit?

*Mr. Copeland:* This particular case was two different varieties of late market peas entered in the same class. It seems to me all questions of this class might be referred to our Executive Committee. This is awarding two prizes to the same man for different varieties, and he should have first and second. This is a question for the officers to decide. I move that this matter be referred to the Executive Committee.

*President:* I think we would be perhaps on safer ground to leave any question if this kind to a Committee rather than to an open meeting. I feel that way personally although perhaps we better take a vote on it.

Voted, that questions relative to the awarding of prizes, arrangement of classes, in fact, all details perhaps would be safe to be left to the Executive Committee.

*Dr. Woods:* It would be possible for the Executive Committee to forestall any action for next year's meeting by their rules.

*Commissioner Roberts:* I understand that Mr. White's report referred to the fact that we might need a larger appropriation from the state than we have had the last two years. You all understand, of course, the first appropriation for administra-

tion of this work was made in 1917. Previous to that time the work had been done by the Assistant Dairy Instructor and paid out of that fund. In 1917 a bill was put in providing for an appropriation of \$3,000 for each of the years 1917 and 1918. The heads of the departments are required to make the estimate. In talking the matter over with Mr. White we have asked for \$4,000 which is a small additional sum and will not do much toward depleting the treasury. There are always a great many people who want additional appropriations and I suggest the propriety of this Association having a legislative committee who would assist in securing this additional appropriation. Also if any other legislation is desirable that it be placed in their hands. Perhaps this could be referred to the Executive Committee. About the time the session opens the Governor and the budget committee will take this matter up and the Commissioner will be called before this Committee to explain what this additional money is used for, and there may not be any trouble in securing the additional amount, but it is well to be prepared, and I make this suggestion,—to have a legislative committee, may be your Executive Committee, if you think wise.

*Dr. Woods:* I move that this Association heartily endorse the action of the Commissioner of Agriculture in making the estimate for another year to be \$4,000 instead of \$3,000, and that the Executive Committee be instructed to use every effort to bring this matter to the attention of the legislature and the budget committee so that it shall become law.

*Mr. Copeland:* I think this is a move in the right direction. I approve of trying to make this self-sustaining, but think the time has not yet arrived. When we have an established reputation it may be worth while for the farmer to take on this work. I do not know that we have reached that time yet. It is of vast importance to the state. I talked with a gentleman yesterday from Massachusetts and he said we were going to lose thousands and thousands of dollars unless seed was looked after and properly certified. If people can get what they want they are perfectly willing to pay for it. He knows of trade that is going to New York and the West that was coming to Maine, and we want to head it off if we can, and we need a liberal appropriation to do it. I heartily approve of this increase and of getting all we can. We shall need it and it will be well expended. Now I



very much doubt if we can establish this and get it on a sound, solid, working basis if we are going to make it self-sustaining.

*Secretary:* I would like to call on the gentleman from Massachusetts, Mr. Grant.

*Mr. Grant:* I am quite sure that the Massachusetts farmer is appreciative of all the work that you are doing in the producing of certified seed stock. The thought came to me while your secretary was making his report, when he reported that 35 per cent. of the people who entered this certified seed work were rejected, and I have been wondering if our Massachusetts farmers were going to get that thirty five per cent. He stated that the rest of the farmers would not want to get hold of that seed. I think the same feeling would exist in Massachusetts, and I hope that kind of stock will not come down there. Our farmers would have exactly the same feeling that you expressed, that it would not be acceptable.

*President:* I would say, Mr. Grant, that we feel our standard is high enough so that perhaps some lots that are disqualified are still not very bad seed. However, the certified seed no doubt is much better.

*Mr. Grant:* Massachusetts wants the best, Mr. Chairman.

*Mr. Lowell:* I do not think we have ever taken any action in regard to the price of seed. It might not be advisable to take any steps that would be binding upon the growers, but still it would be well for us to come to a general understanding that certified seed is worth more than table stock. We all expect to get more than we would for table stock. I was at the State House a while ago and I asked two of the influential men there, interested in our work, what they considered a fair price for certified seed and their ideas were not as much as we were retailing potatoes in Hallowell for. Of course I believe in a man buying seed or anything else as cheap as he can. We all are willing to pay our money if we realize we are getting our money's worth, no matter what we buy. If we buy an old horse, if we think we have got our money's worth we are satisfied. In this business our advertising is done by satisfied customers mainly. I have not advertised in the papers for a couple of years, and yet sell all we have. Last spring if we had a thousand bushels more of potatoes we could have sold them. Our 1916 crop we were offered \$10 a barrel for seed potatoes and we had to

return the money. I do not know as we can take any action in the matter but still I think that the growers of certified seed ought to have a pretty good advance on the price of table stock.

*President:* It seems to me that there is no question but what the consumer or the planter of certified seed would be willing to pay a fair price when he is convinced that he is getting seed which is far above the average. As I said at the beginning of this meeting it is sometimes difficult to convince him of that. Even certified seed may be bought and used by the grower and perhaps planted under adverse conditions. Under these conditions he may not get an extra good crop, then he will be dissatisfied. He may lay it to the seed when really some other factor has prevented his getting a good crop. With this end in view, I have had some correspondence relative to certified seed potatoes and some of the southern seed growers Associations with the idea of asking them to send one or more inspectors here to work in connection with our inspectors in the field. Perhaps we can make arrangements to pay these inspectors the same way that we pay our local men and let them work with them. That would give them confidence in our inspection and if they gain that confidence in the work they will pay a premium for the seed.

*President:* The question before the House has not been acted on. You have heard the motion, all those in favor of endorsing it will please indicate by a show of hands.

So voted.

There being no other business to come before the meeting at this time it was voted to continue this business session immediately following the last paper of the afternoon.

Dr. Woods reports for the committee on nominations.

Voted, that the report of the nominating committee be accepted and that the secretary be instructed to cast one ballot for the officers named therein.

The following officers were elected: President, Guy C. Porter, Houlton; Vice-president, N. H. Rich, Charleston; Secretary and Treasurer, C. M. White, Augusta; Members of Executive Committee, H. J. Shaw, Auburn, S. E. Abbott, Bethel; Member of Experiment Station Council, W. G. Hunton, Portland; Delegates to Federation of Agricultural Associations, L. C. Holston,

Cornish, R. L. Copeland, Brewer; Visitor to College of Agriculture, A. E. Hodges, Fairfield.

### DISCUSSION.

*Question:* I would like to ask what percentage of certified stock is used in Massachusetts?

*Mr. Grant:* Massachusetts knows very little about Maine certified stock, practically nothing. Mr. Forristall who was up here this week with the idea of getting in touch with some of the potato growers, is desirous of getting it for some state institutions and we hope to introduce it in our county. I am just getting back replies from the farmers telling them of this opportunity of getting certified seed and many are replying that they want to get this class of seed, so I think with the federation of county agents, colleges, and experiment stations, a campaign of education will demand more certified seed stock than you have. There is no doubt about it. The only thing in my estimation is that you have to produce the goods to show the results, and then you will have a great demand.

*Question:* Do you know how large areas they had in experiments in Montana, or whether they conducted it more than one year or not?

*Mr. Grant:* I do not know the acreage. It was the result of a bulletin published last December giving the results of last year's work, I judge two years' work—selling last year and last year's growing. I could not tell you anything further, as I obtained this information from their bulletin.

*Secretary:* Did the people making returns of certified seed refer to this Blue Tag or to dealers?

*Answer:* I do not know.

*Secretary:* We have had trouble to a certain extent with a dealer's private certificate, and until we get the buyers acquainted with the Maine Seed Improvement Association's Blue Tag of purity and merit we are at a disadvantage on certified seed.

*Dr. Morse:* If a man sells a bag of potatoes with that tag on once, how is he going to get that to sell the second time.

*Secretary:* We have it fixed now so they cannot use this year's tag next year; that is where we were in error in the begin-

ning. Now we put "crop of 1918" on every tag so that next year these tags are worthless.

*Mr. Grant:* In New York state a good many of the dealers are liable to use the tags a second time.

*Dr. Morse:* How can they get them if they sell the bag of potatoes.

*Mr. Grant:* People get hold of your Maine tags just the same, and the growers instead of getting your certified seed get your regular seed. That is just what the Massachusetts farmer has been getting, ungraded table stock for seed potatoes, and it is hurting the Maine reputation. There is another thing I want to speak of under needs for seed purposes. This fall there has been a lot of trouble with the wholesale markets, commission houses buying seed from their brokers for Maine seed, and you will find that the cars coming in have an infection of late blight anywhere from five, and in one car as high as 35 per cent. Now a car coming from Aroostook with 35 per cent. of blight does not help the potato trade at all. It does not take very many potatoes to make a three per cent allowance out of a two bushel bag. The potato grower will have to take a little more caution in what he sends down there as it makes trouble all the way through.

*Mr. Loring:* I am interested in this, I expect next week my boys will load two carloads of certified stock to send to Massachusetts. We think we are sending some nice stock, it has been certified and we are going to take extreme care. This is our first shipment and we are filling our first order. I am anxious to know that our seed is going to get fair treatment because another year we are going to hear from it. Now if I get it straight you say that in Hampden county, not more than one-third treated their seed. I would not think of buying even certified seed and planting it without treating it, it is not giving the seed a fair show. If we send our seed down there we ought to expect your people to treat it and use the proper cultural methods. I do not know what you use for a spray, whether some commercial mixture or home mixed product. If you do not treat it and spray properly you cannot expect to get good results.

*Dr. Woods:* Is there a proper spraying outfit in your county?

*Mr. Grant:* No, but if you asked the manufacturing concerns I suppose they would say yes.

*Question:* How did they fertilize where they had these stem troubles?

*Answer:* They probably used anywhere from 800 to 1,500 pounds.

*Question:* No potash fertilizer?

*Answer:* No, in the majority of instances no potash.

*Question:* Did you see it where you put on stable dressing along with it?

*Answer:* Yes, I think so.

*Dr. Morse:* We do not find it much in Maine. We have seen the phoma on potatoes where there is no potash.

*Mr. Grant:* Where you have potash you have no phoma—we had a good many fields that were bad with the disease outside of the lack of potash. Another thing is the mechanical injury to the potatoes being sent down there. That cuts off the selling value.

*President:* I am glad to hear Mr. Grant state that the Massachusetts farmer is willing to pay a premium for good, certified seed, and I do not doubt but that it is a fact when he is convinced that it is above the average. I might state, however, it is the general impression among certified seed growers in Aroostook county, that up to the present time the users of certified seed expect to pay a premium of about ten per cent and expect the grower to sort the potatoes out about 25 per cent better, and that was one of my reasons for suggesting that perhaps we could get some representatives of the different consuming states to assist us in our inspection work so that they may have confidence in our inspection and be ready to pay a price that would pay the grower for his trouble and for the extra amount of potatoes that he must rogue and sort out. Just one other question I would like to ask Mr. Grant and that is this,—do you know whether or not the state of New York in their rules for certified seed disqualify altogether on account of mosaic disease?

*Mr. Grant:* No, I do not. As far as I know there is no inspection of the tubers before planting. I do not know whether your Association does that or not.

*President:* We do not do that. We have been very rigid about turning down fields showing mosaic disease, and if I am

rightly informed neither New York nor Wisconsin does. The result is that we have had very little Green Mountain seed that would stand the inspection the past two years on account of mosaic disease, and I am wondering whether or not we are going to stop raising Green Mountains or through Brother Rich and one or two others, who have a strain that does not seem to have the mosaic disease perhaps we can work back into some Green Mountains that will be free from this disease.

*Mr. Grant:* I cannot say not having the rules to consult.

*President:* I understood they took the same position relative to mosaic that they took in regard to late blight, that it is a universal disease in practically every state and that the package shall be marked as perhaps carrying this disease, but it did not disqualify altogether the same as we do on account of mosaic. As I say the result has been the past two years that we have not had any Green Mountain certified seed for sale, except one or two small lots in Central Maine, none whatever in Aroostook county.

*Mr. Grant:* Are you getting any varieties to take its place?

*President:* Yes, a very few. Some few men in Aroostook county are starting in on the Rural New Yorker to take the place of the Green Mountain, of course, this is a different type of potato. We have some strains that do not show the mosaic. Perhaps Mr. Loring knows of some other varieties in the northern part of the county that do not show mosaic.

*Mr. Loring:* Not that would take the place of the Green Mountain as seed stock in Massachusetts. I am interested in whether we can get seed down in the southern part of the state and take up into Aroostook. I think we would be glad to buy some seed from Mr. Rich and these other seed men down here, but it is quite a gamble for the boys to put in twenty-five or thirty acres of Green Mountain and then have them inspected and turned down.

*Dr. Morse:* We have been working at that thing and we obtained from New Sharon, Maine, three years ago, a strain of Green Mountains very productive, vigorous growers and free from mosaic. We grew them at Highmoor Farm in 1916, 1917 and 1918. In 1916 the experimental stuff was perfectly free from mosaic. In 1917 we put them alongside between the rows of the young orchard, and still again this strain of Green Moun-

tains did wonderfully well, and were absolutely free from mosaic. Last year I sent a part of these to Aroostook Farm, planted alongside as checks to our mosaic. We have been changing mosaic stock back and forth from the two farms more or less. Again in 1917 this strain was free from mosaic. This year both of them showed it. The seed from that strain from both farms grown alongside of mosaic stuff and both showed the disease. You can have that for what it is worth. Each one can draw his conclusion. Now while I am talking about it, I might say that in general our experience with mosaic and mosaic stock, that we have been running for several years, has quite a number of different strains. Some of them we have discarded. In general those things do, as they say, materially decrease the yield; once in a while one surprises you and does not. Another peculiar thing, we took our first mosaic down to Highmoor Farm from Aroostook Farm to test out effects of soil and climatic conditions on the disease. It seemed so much better down there, the same strain growing on both farms—I took notes on them myself, there wasn't any two men's judgment on the matter, if I was in error in one place I was on the other—and we first got decidedly less mosaic. Last year we shoved them right round, took part of the Highmoor seed to Aroostook, and part of the Aroostook seed to Highmoor, still had the same result, much less mosaic in the central part of the state. This year the experiment did not run as nicely. I have not checked up the data entirely, but my impression is that there is not much difference. I rather think in general there is less mosaic at Highmoor, but there had been a marked difference in the two years previously.

*Mr. Grant:* I do not know what the influence would be on seed having mosaic here taken further south.

*Mr. Morse:* Sometimes taken down there it does not show at all.

*Question:* When it is taken down in the southern states it is absolutely free from it, and brought up here it shows again. I might say that I believe for you people in Massachusetts, if we are going to furnish you the seed, it is well worth a trial to furnish you the Rural type. I believe the Rural type will grow better not only in your section, but also where we are liable to have dry, hot summers.

*President:* I may say along this line that I have been quite

agitated about the mosaic disease because of the fact that it has kind of upset our seed business relative to handling Green Mountains. We have one grower in Golden Ridge who has been a very fine grower of potatoes, T. S. Robinson,—some of you may know him, and he told me last summer he had so much mosaic down there he did not think he would have much of a crop, although the tops looked very good at that time. In that special section of Aroostook county they had plenty of showers at the critical time, and Mr. Robinson told me the other day that the disease he was worried about did not prove very serious with him, at least he harvested 3600 barrels from 28 acres.

*Dr. Morse:* We have had similar instances where quite severe cases of mosaic yielded up with some of our best, ordinarily it is the other way.

*Secretary:* That does not correspond with the experience of a Mr. Thompson in Kingman. He said he had 35 acres and he harvested 3400 barrels. If it had not been for a ten acre piece that was affected he would have averaged a good bit over one hundred barrels per acre, but the ten acres reduced the yield.

*President:* So many factors enter in, you can not seem to lay the blame on any one factor.

## DISCUSSION.

*Mr. Lowell:* We have listened to a paper that I think is the right idea carried right through, although in speaking of the cultivation in dry weather, we calculate to cultivate with a horse-hoe once a week, and when we see any signs of rust then we spray once a week. She did not state the number of inches deep that they plant the potatoes but said it was well to plant them deep. In planting our potatoes we put them about two inches below the level surface of the ground, and then before the sprouts are started go across those rows and level off the land with a weeder or a drag, or most anything that will level land; that will check the weeds that have started, and then we commence cultivating before the potatoes are up,—go through with a cultivator as soon as they begin to break ground any, and then when the potatoes are up an inch and a half or two inches, if it is a with grassy piece of ground or very weedy, we go through with the horse-hoe twice and cover these potatoes, and a potato



that grows a rank top has pretty nearly subdued the witch grass on that piece of land. The covering of witch grass does more towards killing it than cutting it off, as this bends the witch grass down and covers it up so the sprout cannot come up again, although the goodness of the root appears to go into that sprout before they start another.

*President:* Dr. Woods, at the Aroostook Farm—the use of the weeder has been encouraged the last year. Do you use a weeder up there?

*Dr. Woods:* We use a weeder some, but not very much.

*Secretary:* Mr. Forristall has just come in. I would like to have him talk a little on the value of seed inspection. What do you think about the value, not only to our own state but also to our trade.

*Mr. Forristall:* This is rather a surprise to me, to be called upon just now, but I might add my little bit by saying that I believe the seed improvement work that has been started, especially with potatoes, is one of the best pieces of work that is being done in your state. I have been interested in potato growing for a great many years, but more especially the last few years since I have been in extension work, and I find that the potato yields itself to breeding and is one of the most remunerative of vegetables that we can work on. Now as to certification it costs money. In Massachusetts we want good seed potatoes. We have got to the point where we are a little afraid of anything that may come on to the market, and want to know the history of that stock. Now to get the history will cost you people more money, but let me warn you now that if you do not put a little money into the certification of your seed, cleaning up your potato crop, it will be less remunerative for your state than it has been in the past. Already New York state is taking some of your trade. Some of the best potato growers on Long Island are finding out that seed potatoes from clean fields in New York state are outyielding potatoes from your wonderful Aroostook county. It means this, that New York state sells to Long Island farmers, New Jersey and farther south. They have a good hustling crowd over there. Dr. Barrus has taken charge of the certification work. He is ably assisted by Mr. Sands from the Department of Agriculture at Albany, and they are doing a wonderful work. The county agents in these potato counties

have taken hold of the work with a vim. That means that they are going to get the bulk of the Long Island trade that you people have enjoyed for so long. When I went through Aroostook county this fall I was amazed not to find any Green Mountain potatoes being certified. Now I think the reason for this is that the Green Mountain potato has been allowed to run down, and become diseased. In a great many instances the farmer himself was not equal to the occasion of telling some of those disastrous diseases, and consequently your Green Mountains in Aroostook are in a bad way. Now a potato that is grown in northern Maine showing only slight disease, in its incipient stages, if taken to Massachusetts will develop the disease very fast and probably cut down the yield of that particular potato from 30 to 70 per cent, and if you get enough of such hills you are going to trim the yield tremendously. It is that very thing then that has made the Massachusetts men a little scary as to the kind of seed that he is purchasing from Maine. Now the point is, you are not backing your seed department enough. You ought to back your seed improvement work with a larger fund so that they get out and do some work with your potato growers. Instead of giving them \$3,000 you should give them \$25,000, and it would earn you the biggest dividends of any money you ever invested anywhere in this state.

*Mr. Lowell:* What he said in regard to the appropriation, we ought to have for the improvement of seed, and if we could have that amount we could equal Wisconsin and New York in this work. We certainly have not had enough the past year, but hope to get more next year. We have asked for \$1,000 more and I think we had better ask for \$2,000 more, and then take what we can get.

*President:* If we could get Mr. Forristall to come before our legislative committee this winter perhaps he would help a lot.

## REPORT OF COMMITTEE ON RESOLUTIONS.

The Maine Seed Improvement Association, in annual session assembled, believing that the efficient working of our Association is of paramount importance in our state, presents the following resolutions:

Whereas, the work of the Maine Agricultural Experiment Station at Highmoor Farm, in oat and other small grain breeding, in breeding of strains of old fashioned and improved yellow-eye beans, in sweet and field corn, and in the studies of their cultivation and propagation, have been and are of the highest benefit to practical growers of these crops.

Whereas, the funds derived from Federal Appropriations are, because of increased cost of all commodities and service, inadequate to meet the expenses of the Station.

Whereas, after economizing in other directions, the Station management is confronted with the necessity of curtailing or completely stopping these studies that have brought great financial returns to the state.

Resolved, that the Maine Seed Improvement Association in recognition of the great value of these investigations to the agriculture of the state, hereby respectfully requests the next legislature to investigate the needs of the Station and make such appropriation for its support, that this will go on at Highmoor Farm uninterrupted, and directs its Executive Committee and representatives on the State Council to take such steps as shall insure this support.

Resolved, that this Association extend an invitation to the potato growers associations buying Maine seed, to cooperate in determining the requirements of certification, and also to put a co-operating inspector into the field.

Resolved, that as increased crop production depends fundamentally on high grade seed, this principle should be impressed upon the farmers in every way possible.

Resolved, that this Association endorses and wishes to cooperate with the food administration in every way possible.

Resolved, that this Association urge farmers to secure seed as early as possible for next spring's planting and in order to reduce labor pressure, they be urged through the county agents, to plant such varieties of corn for the silo as will be adapted to Maine conditions, and produce as large amount of feed value with less bulk and less labor than is necessary in handling the coarser varieties, often used for the silo.

Respectfully submitted,

A. E. HODGES,  
FRED P. LORING,  
J. L. SCRIBNER,  
*Committee.*

Voted, that the report of the committee on resolutions be accepted.

BUSINESS MEETING OF THE MAINE LIVESTOCK  
BREEDERS' ASSOCIATION

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Portland City Hall, Nov. 22, 1918.

The meeting was called to order by President A. E. Hodges of Fairfield.

The report of the secretary was read and approved. In the absence of the Treasurer, the secretary made the following report, which was approved.

Dec. 6, 1917	Amount on hand,	\$184.09
Oct. 4, 1918	Paid Treasurer Maine Federation of Agricultural Associations,	4.00
Nov. 12, 1918	Balance on hand,	180.09

The following were appointed by the Chair as a committee on nominations: Mr. C. L. Pike, Dr. J. A. Ness, Mr. C. R. Leland.

H. M. Tucker made a report for the Committee on Increased Appraisal for Livestock, condemned on account of Tuberculosis. This report was to the effect that the committee had gathered all information relative to the subject, submitting the same to the Governor. As a result, Mr. Bearce, Livestock Sanitary Commissioner, was instructed to change the rulings so that an animal is now valued on its pedigree and actual value rather than its age.

The report of this committee was approved.

It was also moved and seconded that the President be appointed as a committee of one to act with the several breeders' associations of livestock, they to act with the Commissioner of Markets, to put the interests of Maine pure bred livestock before the buying people.

The report of the committee on nominations was made. It was voted that the report be accepted and that the Chairman of

the committee be instructed to cast one ballot for the officers named therein.

President, A. E. Hodges; Secretary, E. W. Morton; Treasurer, A. H. Ellis.

Executive Committee—H. J. Shaw, W. B. Kendall, J. A. Ness, L. E. McIntire.

Delegates to Maine Federation—C. L. Pike, C. R. Leland.

Member Experiment Station Council—L. C. Holston.

Visitor to College of Agriculture—Mrs. B. B. Mansfield.

Voted to adjourn.

Respectfully submitted,

E. W. MORTON,  
*Secretary.*



# STATISTICS OF AGRICULTURAL SOCIETIES.



## OFFICERS OF AGRICULTURAL SOCIETY.

NAME OF SOCIETY	President	P. O. Address	Secretary	P. O. Address	Treasurer	P. O. Address
Maine State Agricultural Society	L. H. Carroll	Norway	H. V. Wilson	Lewiston	T. F. Callahan	Lewiston.
Eastern Maine State Fair	H. A. Chapman	Bangor	S. T. White	Bangor	Jas. A. Dunning	Bangor.
Central Maine Fair	Harvey D. Eaton	Waterville	R. M. Gilmore	Waterville	F. D. Robinson	Waterville.
Maine State Pomological Society	C. C. Clements	Winterport	E. L. White	Bowdoinham	T. E. Chase	Buckfield.
Maine State Poultry Association	Geo. P. Coffin	Freeport	A. L. Merrill	Auburn	W. E. Scott	Portland.
Androscoggin County	John Look	North Jay	Chas. D. Dyke	Livermore Falls	George W. Dyke	Livermore Falls.
Androscoggin, Greene Town Fair Association	W. L. Mower	Greene	W. O. Philbrook	Greene	J. C. Wood	Greene.
Aroostook, Northern Maine Fair Association	J. Frank Guioi	Presque Isle	Ernest T. McGlauffin	Presque Isle	John E. Bishop	Presque Isle.
Aroostook, Houlton	George H. Benn	Hodgdon	A. J. Saunders	Houlton	E. Murray Burt	Houlton.
Caribou Trotting Park and Fair Association	John H. McDaniels	Caribou	Frank Riley	Caribou	J. F. Lardeau	Caribou.
Cumberland County	C. W. Chaplin	Gorham	F. E. Moulton	Gorham	H. C. Palmer	Gorham.
Cumberland Farmers' Club	A. W. Stanley	Cumberland Ctr.	Willard Wilson	Cumberland Ctr.	Willard Wilson	Cumberland Ctr.
Cumberland, New Gloucester and Danville	C. L. McCann	New Gloucester	J. P. Witham	New Gloucester.	G. C. Jordan	Upper Gloucester.
Cumberland, Freeport Poultry Association	A. Q. Carter	Waterville	Geo. P. Coffin	Augusta	L. E. Curtis	Freeport.
Cumberland, Bridgton	Fred S. Hanson	Bridgton	H. W. Jones	Bridgton	J. T. Bardsley	Bridgton.
Franklin County	Chas. M. Hobbs	W. Farmington	George D. Clark	Farmington	Chas. H. Pierce	Farmington.
Franklin, North	Bion Wing	Phillips	J. I. Harnden	Phillips	Howard Ross	Phillips.
Hancock County	F. P. Merrill	Bluehill	N. L. Grindell	So. Penobscot	M. R. Hinkley	Bluehill.
Hancock, Eden	Chas. L. Shand	Bar Harbor	Julian Emery	Salisbury Cove	Chas. F. King	Eden.
Kennebec, Cochewagan	H. H. Witherell	Monmouth	W. E. Reynolds	Monmouth	Chas. Berry	Monmouth.
Kennebec County	E. E. Feacock	Readfield	E. E. Peacock	Readfield	Fred A. Walker	Readfield.
Kennebec, South	L. B. Hisler	Windsorville	A. N. Douglas	Gardiner, R.F.D. 9	Jasper S. Gray	Windsorville.
Knox, North	E. E. Thurston	Union	H. L. Grinnell	Union	George C. Hawes	Union.
Lincoln County	George D. Pastorius	Newcastle	J. A. Perkins	Nobleboro	H. E. Winslow	Damariscotta.
Lincoln, Bristol	E. W. Sproul	Bristol	J. Wilbur Hunter	Bristol	E. B. Woodward	Damariscotta.
Oxford County	W. J. Wheeler	South Paris	W. O. Frothingham	South Paris	W. O. Frothingham	South Paris.
Oxford, West	C. W. Farrington	Fryeburg	B. Walker McKeen	Fryeburg	A. D. Merrill	Fryeburg.
Androscoggin Valley	W. W. Rose	Canton	O. M. Richardson	Canton	A. F. Russell	Canton.
Oxford, North	Young A. Thurston	Andover	John F. Talbot	Andover	Mathias Mooney	Andover.
Oxford, Western Maine Poultry Association	H. E. Lovejoy	Norway	E. P. Crockett	South Paris	H. H. Bean	South Paris.
Penobscot, West	E. M. Atkins	Dexter, R.F.D. 3	E. E. Colbath	Dexter, R.F.D. 3	F. C. Barker	Exeter, R.F.D. 1.

Penobscot, North .....	C. M. Lombard ..	Springfield .....	J. R. Averill .....	Prentiss .....	J. C. Butterfield ..	Springfield.
Penobscot, Orrington .....	C. H. Chapman ..	S. Brewer, R.F.D.	F. E. King .....	S. Brewer, R.F.D.	F. E. King .....	S. Brewer, R.F.D.
Penobscot, Bangor Poultry Association	J. P. Webster ..	Bangor .....	W. H. Northup ..	Bangor .....	W. H. Northup ..	Bangor.
Sagadahoc, Richmond Farmers' Club	U. G. Patten .....	Gardiner .....	N. H. Skelton .....	Richmond .....	E. H. Stuart .....	Richmond.
Somerset, East .....	F. S. Burrill .....	Hartland .....	E. A. Webber .....	Hartland .....	E. A. Webber .....	Hartland.
Somerset, Central .....	L. E. Jacobs .....	Skowhegan .....	S. H. Bradbury ..	Skowhegan .....	J. W. Fogler .....	Skowhegan.
Somerset, Four County Fair Association	A. H. Burse .....	Pittsfield .....	Fred R. Smith .....	Pittsfield .....	W. L. Pushor .....	Pittsfield.
Somerset, Embden .....	C. K. Williams ..	North Anson ..	Grant Witham .....	Solon .....	S. P. Dunbar .....	North Anson.
Somerset, Harmony Grange Fair Association	R. E. Gould .....	Harmony .....	P. B. Chadbourne ..	Harmony .....	Mrs. Wm. G. Bailey	Harmony.
Waldo and Penobscot .....	F. A. Littlefield ..	Monroe, R.F.D. 2	F. H. Putnam .....	Monroe .....	G. A. Palmer .....	Monroe.
Waldo, New Belfast Fair .....	Harry E. Bangs ..	Belfast .....	H. C. Buzzell .....	Belfast .....	T. Frank Parker ..	Belfast.
Waldo, Unity Park Association	Ackley Plummer ..	Unity .....	J. H. Farrell .....	Unity .....	C. D. Connor .....	Unity.
Washington, West .....	R. M. Allen .....	Columbia Falls ..	W. S. Coffin .....	Harrington .....	G. G. Freeman .....	Cherryfield.
Washington, Machias Valley .....	William G. Means ..	Machias .....	Frank S. Ames .....	Machias .....	George B. Boynton ..	Machias.
York, Cornish .....	Fred P. Chick .....	Cornish .....	Leon M. Ayer .....	Cornish .....	Chas. Bradeen .....	Cornish.

ANALYSIS OF EXHIBITIONS.

NAME OF SOCIETY.	Number of horses and colts.	Number of thoroughbred bulls and bull calves.	Number of thoroughbred cows, heifers and heifer calves.	Number of grade cows, heifers and heifer calves.	Number of oxen and steers.	Number of animals for beef.	Number of cattle shown in herds.	Total number of neat stock.	Number of sheep.	Number of swine.	Number of poultry (coops).
Maine State Agricultural Society .....	57	71	236	12	104	74	84	497	294	152	2,260
Eastern Maine State Fair .....	48	19	98	—	—	—	23	117	123	195	474
Central Maine Fair .....	29	84	254	—	160	62	255	560	450	107	2,300
Maine State Pomological Society .....	—	—	—	—	—	—	—	—	—	—	—
Maine State Poultry Association .....	—	—	—	—	—	—	—	—	—	—	1,000
Androscoggin County .....	6	2	—	6	36	—	—	44	15	4	5
Androscoggin, Greene Town Fair Association .....	—	2	9	—	10	—	8	19	—	4	13
Aroostook, Northern Maine Fair Association .....	118	93	250	26	2	—	191	371	80	231	433
Aroostook, Houlton .....	48	52	160	34	1	1	14	257	29	37	23
Aroostook, Caribou Trotting Park and Fair Association .....	25	15	43	—	—	—	—	58	7	12	165
Cumberland County .....	79	11	25	45	110	26	40	217	17	15	148
Cumberland Farmers' Club .....	6	—	1	6	22	—	—	29	—	1	35
Cumberland, New Gloucester and Danville .....	12	6	27	10	16	2	18	61	3	10	8
Cumberland, Freeport Poultry Association .....	—	—	—	—	—	—	—	—	—	—	835
Cumberland, Bridgton .....	76	—	6	18	30	12	—	66	18	—	—
Franklin County .....	65	53	181	89	466	30	65	819	157	—	160
Franklin, North .....	50	12	25	140	100	25	70	302	60	—	75
Hancock County .....	1	4	2	16	26	4	—	52	3	—	14
Hancock, Eden .....	—	1	—	9	—	—	—	10	4	5	30
Kennebec, Cochenewagan .....	4	5	29	3	12	—	25	49	10	8	8
Kennebec County .....	42	14	62	29	104	21	18	230	36	28	48
Kennebec, South .....	8	8	13	23	88	7	15	139	4	10	5

Knox, North .....	4	15	14	18	36	4	20	87	14	2	5
Lincoln County .....	14	5	13	6	44	4	15	72	—	7	7
Lincoln, Bristol .....	—	—	—	3	12	—	—	15	—	—	—
Oxford County .....	103	33	63	89	120	12	42	317	33	8	129
Oxford, West .....	80	7	60	64	160	14	40	305	30	20	28
Androscoggin Valley .....	52	4	32	4	28	2	—	70	20	2	2
Oxford, North .....	20	4	20	22	36	—	18	82	18	10	12
Oxford, Western Maine Poultry Association .....	—	—	—	—	—	—	—	—	—	—	—
Penobscot, West .....	42	35	108	63	40	4	72	250	63	30	848
Penobscot, North .....	2	3	—	14	—	—	10	17	—	—	163
Penobscot, Orrington .....	4	1	—	9	—	—	4	10	—	—	2
Penobscot, Bangor Poultry Association .....	—	—	—	—	—	—	—	10	—	—	—
Sagadahoc, Richmond Farmers' and Mechanics' Club .....	1	—	—	1	—	—	—	1	—	—	726
Somerset, East .....	14	8	8	50	10	5	25	81	33	1	53
Somerset, Central .....	32	24	73	24	16	12	—	149	81	6	80
Somerset, Four County Fair Association .....	4	26	40	33	—	—	35	99	29	5	150
Somerset, Embden .....	19	1	4	10	2	—	6	17	10	—	—
Somerset, Harmony Grange Fair Association .....	2	5	—	35	—	—	—	40	—	2	—
Waldo and Penobscot .....	8	8	25	23	8	6	25	70	22	2	—
Waldo, New Belfast Fair .....	33	4	16	20	10	11	45	61	26	29	70
Waldo, Unity Park Association .....	74	9	12	30	18	20	40	89	15	11	6
Washington, West .....	10	11	17	20	6	—	—	54	8	7	14
Washington, Machias Valley .....	12	1	5	1	12	—	—	19	22	19	6
York, Cornish .....	15	15	38	25	100	6	40	184	—	6	22
	1,219	671	1,969	1,030	1,945	364	1,263	5,986	1,734	986	10,364

ANALYSIS OF AWARDS.

NAME OF SOCIETY.	Amount of premiums awarded trotting bred stallions.	Amount of premiums awarded trotting bred brood mares.	Amount of premiums awarded draft stock stallions.	Amount of premiums awarded draft stock brood mares.	Amount of premiums awarded family horses.	Amount of premiums awarded gentlemen's drivers.	Amount of premiums awarded farm teams.	Amount of premiums awarded matched carriage horses.	Amount of premiums awarded colts.	Amount of premiums awarded roadster brood mares.	Amount of premiums awarded horses for draft.	Amount of premiums awarded pair pulling horses.	Amount of premiums awarded work horses.
Maine State Agricultural Society	\$ 62 00	—	\$110 00	—	—	\$ 16 00	—	—	\$ 20 00	—	\$ 110 00	—	—
Eastern Maine State Fair	—	—	—	—	\$ 10 00	50 00	\$ 50 00	—	—	—	—	—	—
Central Maine Fair	18 00	26 00	33 00	23 00	—	—	—	—	15 00	—	110 00	—	—
Maine State Pomological Society	—	—	—	—	—	50 00	—	—	—	—	—	—	—
Maine State Poultry Association	—	—	—	—	—	—	—	—	—	—	—	—	—
Androscoggin County	4 00	—	—	—	—	—	—	—	—	—	—	—	—
Androscoggin, Greene Town Fair Association	—	—	—	—	—	—	—	—	3 00	—	18 00	—	—
Aroostook, Northern Maine Fair Association	—	—	—	—	—	—	—	—	—	—	—	—	—
Aroostook, Houlton	26 00	12 00	112 00	67 00	—	15 00	32 00	21 00	285 00	21 00	85 00	—	—
Aroostook, Caribou Trotting Park and Fair Association	36 00	12 00	111 00	53 00	18 00	37 00	—	—	112 00	—	—	85 00	—
Cumberland County	10 00	—	18 00	8 00	—	—	—	—	31 50	—	21 00	—	—
Cumberland Farmers' Club	20 00	6 00	—	8 00	—	—	—	—	30 00	—	75 00	—	—
Cumberland, New Gloucester and Danville	2 00	—	—	3 00	—	—	—	—	1 00	—	—	—	—
Cumberland, Freeport Poultry Association	7 00	—	—	—	2 00	3 00	—	—	9 00	—	17 00	—	—
Cumberland, Bridgton	—	—	—	—	—	—	—	—	—	—	—	—	—
Franklin County	24 00	6 00	10 00	10 00	6 00	—	—	7 00	18 00	—	35 00	—	—
Franklin, North	6 00	4 00	2 00	—	14 00	14 00	—	—	11 00	—	137 00	—	—
Hancock County	—	1 75	4 50	—	—	6 00	—	2 00	14 95	—	10 00	—	—
Hancock, Eden	—	—	—	—	—	—	—	—	3 00	—	10 00	—	—
Kennebec, Cochenewagan	—	—	75	75	—	—	—	—	75	—	30 00	—	—

Kennebec County .....	20 00	21 00	10 00	12 00	6 00	6 00	—	6 00	—	—	24 00	—	—
Kennebec, South .....	—	—	—	2 00	—	—	—	—	11 00	—	—	—	—
Knox, North .....	—	—	3 00	2 00	3 00	2 50	—	2 50	7 50	—	47 00	—	—
Lincoln County .....	—	2 00	2 00	2 00	2 00	—	—	—	10 00	—	—	—	—
Lincoln, Bristol .....	—	—	—	—	—	—	—	—	—	—	—	—	—
Oxford County .....	25 00	23 00	12 00	12 00	—	25 00	—	—	43 00	—	163 00	—	63 00
Oxford, West .....	24 00	20 00	10 00	17 00	—	—	—	16 00	10 00	—	50 00	—	—
Androscoggin Valley .....	—	—	3 00	8 00	—	5 00	—	—	3 00	—	86 00	—	—
Oxford, North .....	4 00	4 00	4 00	9 00	—	4 00	—	—	18 00	—	64 00	—	—
Oxford, Western Maine Poultry Association .....	—	—	—	—	—	—	—	—	—	—	—	—	—
Penobscot, West .....	10 00	—	—	3 00	10 00	10 00	—	—	11 50	—	109 00	—	—
Penobscot, North .....	—	—	3 00	3 00	—	—	—	—	—	—	—	—	—
Penobscot, Orrington .....	—	2 50	—	2 50	—	—	—	—	—	—	—	—	—
Penobscot, Bangor Poultry Association .....	—	—	—	—	—	—	—	—	—	—	—	—	—
Sagadahoc, Richmond Farmers' and Mechanics' Club .....	1 00	1 00	—	1 00	1 00	—	—	—	2 20	—	—	—	—
Somerset, East .....	—	—	5 00	5 00	—	—	—	—	15 00	—	105 00	—	—
Somerset, Central .....	4 00	4 00	—	9 00	—	14 00	22 50	—	2 00	—	80 00	—	—
Somerset, Four County Fair Association .....	1 00	4 00	12 00	—	—	—	—	—	—	—	145 00	—	—
Somerset, Embden .....	—	—	—	—	—	—	—	—	12 00	—	20 00	—	—
Somerset, Harmony Grange Fair Association .....	—	—	—	—	—	—	—	—	2 00	—	—	—	—
Waldo and Penobscot .....	—	—	—	—	19 00	12 00	—	18 00	6 00	—	121 00	—	—
Waldo, New Belfast Fair .....	—	—	—	—	—	—	—	—	—	—	20 00	—	—
Waldo, Unity Park Association .....	11 00	6 00	12 00	8 00	16 00	8 00	—	16 00	20 00	—	40 00	—	—
Washington, West .....	—	—	—	—	—	45 00	—	—	47 00	—	15 00	—	—
Washington, Machias Valley .....	24 00	—	—	—	5 00	—	—	5 00	15 00	—	—	—	—
York, Cornish .....	6 00	6 00	6 00	12 00	—	4 00	—	—	32 00	—	—	—	—
	\$345 00	\$161 25	\$483 25	\$280 25	\$112 00	\$281 50	\$104 50	\$96 50	\$821 40	\$21 00	\$1,747 00	\$85 00	\$63 00

## ANALYSIS OF AWARDS—Continued.

NAME OF SOCIETY.	Amount of premiums awarded thoroughbred bulls and bull calves.	Amount of premiums awarded three animals progeny of one bull.	Amount of premiums awarded thoroughbred cows, heifers and heifer calves.	Amount of premiums awarded grade cows, heifers and heifer calves.	Amount of premiums awarded best steers.	Amount of premiums awarded herds.	Amount of premiums awarded working oxen and steers.	Amount of premiums awarded matched oxen and steers.	Amount of premiums awarded trained steers.	Amount of premiums awarded beef cattle.	Amount of premiums awarded town teams.	Amount of premiums awarded oxen and steers for draft.
Maine State Agricultural Society	\$ 440 00		\$ 641 00	\$ 30 00	—	\$ 405 00	\$ 368 00	\$ 37 00	\$ 5 00	\$160 00	\$ 75 00	\$ 74 00
Eastern Maine State Fair	219 00	\$88 00	493 00	—	—	400 00	—	—	—	—	—	—
Central Maine Fair	817 00	—	695 00	772 00	—	54 50	119 50	5 00	182 00	—	179 00	246 00
Maine State Pomological Society	—	—	—	—	—	—	—	—	—	—	—	—
Maine State Poultry Association.	—	—	—	—	—	—	—	—	—	—	—	—
Androscoggin County	—	—	15 00	—	—	—	—	29 00	19 00	4 00	12 00	—
Androscoggin, Greene Town Fair Association	80	—	40	—	—	1 50	—	—	—	—	17 00	11 00
Aroostook, Northern Maine Fair Association	595 00	—	1,064 00	115 00	—	278 00	—	12 00	—	—	—	30 00
Aroostook, Houlton	302 85	—	735 53	102 00	—	149 32	6 00	—	—	48 67	25 00	—
Aroostook, Caribou Trotting Park and Fair Association	69 00	—	130 00	—	—	—	—	—	—	—	—	—
Cumberland County	30 00	—	53 00	67 00	—	91 00	33 00	27 00	24 00	22 00	32 00	188 00
Cumberland Farmers' Club	—	—	2 00	12 00	—	—	—	17 00	—	11 00	—	10 00
Cumberland, New Gloucester and Danville	23 00	—	71 00	23 00	—	30 00	2 00	2 00	—	1 00	—	6 00
Cumberland, Freeport Poultry Association	—	—	—	—	—	—	—	—	—	—	—	—
Cumberland, Bridgton	—	—	11 00	12 00	—	—	35 00	5 00	10 00	5 00	20 00	40 00
Franklin County	100 50	—	244 05	95 00	—	93 50	46 00	109 00	3 00	43 00	204 00	125 00
Franklin, North	10 75	—	12 90	30 70	—	39 00	4 25	10 65	—	10 00	33 00	20 00
Hancock County	15 00	—	6 00	37 00	—	5 00	36 00	—	—	—	—	—
Hancock, Eden	2 50	—	—	15 00	—	—	—	—	—	—	—	—
Kennebec, Cochnewagan	2 00	—	10 00	5 00	—	15 00	6 00	9 50	1 00	—	—	—

Kennebec County	52 50	—	37 50	22 50	—	48 00	24 00	30 00	6 00	12 00	25 00	20 00
Kennebec, South	22 00	—	14 50	24 00	—	31 00	23 75	24 25	6 00	15 50	42 00	27 25
Knox, North	33 50	—	24 50	31 50	—	21 00	55 00	20 00	—	3 50	48 00	61 00
Lincoln County	5 50	—	19 00	7 00	—	16 00	7 00	18 00	—	6 00	—	21 00
Lincoln, Bristol	—	—	—	5 00	—	—	6 75	—	—	—	—	—
Oxford County	147 00	—	172 00	209 00	—	83 00	154 00	52 00	—	48 00	124 00	304 00
Oxford, West	46 00	—	150 40	80 00	—	76 00	45 00	75 00	15 00	32 50	140 00	148 00
Androscoggin Valley	10 00	—	38 00	8 00	18 00	—	7 00	17 00	—	4 00	34 00	67 00
Oxford, North	16 00	—	70 00	48 00	—	18 00	48 50	20 00	7 50	—	10 00	40 00
Oxford, Western Maine Poultry Association	—	—	—	—	—	—	—	—	—	—	—	—
Penobscot, West	96 00	—	214 50	87 50	—	87 00	—	69 00	10 00	5 00	10 00	—
Penobscot, North	4 50	—	—	23 50	—	10 00	—	—	—	—	—	—
Penobscot, Orrington	3 00	—	—	6 50	—	4 00	2 00	—	—	—	—	—
Penobscot, Bangor Poultry Association	—	—	—	—	—	—	—	—	—	—	—	—
Sagadahoc, Richmond Farmers' and Mechanics' Club	—	—	50	—	—	—	—	—	—	—	—	—
Somerset, East	27 00	—	31 00	54 00	—	13 00	5 00	—	—	13 00	12 00	10 00
Somerset, Central	75 00	—	127 00	63 00	—	—	14 50	17 00	—	25 00	40 00	48 00
Somerset, Four County Fair Association	68 00	—	110 00	70 50	—	60 00	—	—	—	—	—	—
Somerset, Embden	3 00	—	5 00	6 00	—	3 00	2 00	—	—	—	—	—
Somerset, Harmony Grange Fair Association	—	—	—	31 00	—	—	—	—	—	—	—	—
Waldo and Penobscot	27 00	—	127 00	35 00	—	64 00	40 00	6 00	—	15 00	—	103 00
Waldo, New Belfast Fair	12 00	—	18 00	17 50	—	44 00	17 00	—	—	—	—	5 00
Waldo, Unity Park Association	18 00	—	25 00	18 00	—	50 00	25 00	20 00	5 00	26 00	10 00	30 00
Washington, West	110 00	—	112 00	121 00	—	—	—	56 00	—	—	—	—
Washington, Machias Valley	5 00	—	16 00	1 50	—	—	—	14 00	8 00	—	—	30 00
York, Cornish	51 00	—	104 00	58 00	—	30 00	10 00	65 00	29 00	18 00	84 00	58 00
	\$3,459 40	\$88 00	\$5,599 78	\$2,343 70	\$18 00	\$2,219 82	\$1,142 25	\$766 40	\$330 50	\$528 17	\$1,176 00	\$1,722 25



## ANALYSIS OF AWARDS—Concluded.

NAME OF SOCIETY.	Amount of premiums awarded sheep.	Amount of premiums awarded swine.	Amount of premiums awarded poultry.	Amount of premiums awarded grain and root crops.	Amount of premiums awarded fruit and flowers.	Amount of premiums awarded bread and dairy products.	Amount of premiums awarded honey, sugar and syrup.	Amount of premiums awarded agricultural implements.	Amount of premiums awarded household manufactures and needle-work.	Amount of premiums awarded objects not named above.	Total amount of premiums and gratuities awarded.
Maine State Agricultural Society	\$ 510 00	\$ 150 00	\$ 732 50	\$ 102 00	\$ 210 00	\$156 00	—	—	\$ 204 50	\$ 350 00	\$ 4,968 00
Eastern Maine State Fair	425 00	34 00	275 25	209 75	202 75	84 45	—	—	164 00	374 25	3,079 45
Central Maine Fair	729 00	93 00	1,012 50	116 00	200 00	154 00	15 40	—	336 00	480 75	6,436 65
Maine State Pomological Society	—	—	—	—	1,352 00	—	—	—	—	—	1,352 00
Maine State Poultry Association.	—	—	925 50	—	—	—	—	—	—	—	925 50
Androscoggin County	17 00	4 00	3 75	7 50	3 20	—	—	—	16 25	—	153 70
Androscoggin, Greene Town Fair Association	—	1 75	6 00	16 00	10 95	4 50	—	—	5 35	4 50	79 75
Aroostook, Northern Maine Fair Association	515 00	490 00	320 00	173 85	209 75	64 50	55 00	—	294 70	699 90	5,592 70
Aroostook, Houlton	43 00	67 50	180 75	116 35	76 80	30 90	6 00	—	156 75	36 46	2,547 88
Aroostook, Caribou Trotting Park and Fair Association	17 00	32 00	114 50	50 50	42 25	14 00	11 00	—	78 50	40 00	687 25
Cumberland County	16 00	23 00	315 00	55 90	36 55	32 00	39 00	—	82 45	25 00	1,336 90
Cumberland Farmers' Club	—	2 00	25 25	7 75	6 25	3 00	—	—	—	6 50	108 75
Cumberland, New Gloucester and Danville	3 00	7 00	3 95	30 30	16 45	11 90	16 00	—	16 25	2 00	302 85
Cumberland, Freeport Poultry Association	—	—	690 25	—	—	—	—	—	—	—	690 25
Cumberland, Bridgton	13 00	—	—	18 00	—	11 50	—	\$23 00	27 75	162 00	509 25
Franklin County	124 00	—	99 80	72 35	63 05	20 00	13 25	—	79 40	142 60	1,865 50
Franklin, North	28 50	—	33 55	14 90	4 30	3 15	4 10	—	23 30	7 50	328 75
Hancock County	3 00	—	5 50	54 50	22 00	11 05	9 50	—	45 15	218 00	480 70
Hancock, Eden	2 00	7 00	12 15	60 40	38 05	24 65	—	—	—	50 00	211 75
Kennebec, Cochenewagan	2 50	3 00	9 00	35 00	28 00	7 00	—	—	25 50	12 95	203 70

Kennebec County	22 50	12 00	60 00	72 00	68 75	39 50	22 50	—	82 50	58 50	820 75
Kennebec, South	8 00	2 00	5 00	28 10	8 60	4 30	75	—	39 80	—	339 80
Knox, North	11 50	5 00	9 00	64 00	46 70	3 50	8 65	—	26 45	29 35	569 65
Lincoln County	—	50	13 00	48 00	36 90	5 50	2 75	—	24 95	19 50	268 60
Lincoln, Bristol	—	—	—	9 50	5 25	2 25	—	—	10 50	1 40	40 65
Oxford County	38 00	38 00	173 00	92 00	332 00	32 00	36 00	33 00	101 50	420 00	2,954 50
Oxford, West	34 50	23 00	40 60	45 20	32 20	25 60	45 00	—	155 20	299 60	1,655 80
Androscoggin Valley	13 50	6 00	3 00	4 95	9 25	3 20	—	—	12 90	40 00	400 80
Oxford, North	12 50	16 00	9 00	28 60	16 00	20 00	24 50	—	50 40	25 28	590 28
Oxford, Western Maine Poultry Association	—	—	858 06	—	—	—	—	—	—	—	858 06
Penobscot, West	65 00	33 00	56 50	52 75	26 15	12 00	11 00	—	122 70	266 26	1,377 86
Penobscot, North	—	—	1 50	20 00	30 00	20 00	—	—	67 65	70 00	253 15
Penobscot, Orrington	—	—	—	15 00	8 25	—	—	—	23 45	24 50	91 70
Penobscot, Bangor Poultry Association	—	—	700 65	—	—	—	—	—	—	—	700 65
Sagadahoc, Richmond Farmers' and Mechanics' Club	—	—	—	11 70	9 05	1 90	—	—	7 10	1 60	38 05
Somerset, East	60 50	3 00	60 40	29 25	17 25	12 00	5 50	—	24 50	68 90	576 30
Somerset, Central	152 50	9 00	64 25	40 00	35 75	31 00	30 00	—	67 20	15 00	989 70
Somerset, Four County Fair Association	72 50	10 00	174 75	18 25	10 50	3 25	—	—	26 75	129 50	916 00
Somerset, Embden	8 00	—	—	4 00	—	—	—	—	—	—	63 00
Somerset, Harmony Grange Fair Association	—	2 00	—	—	1 00	—	3 00	—	—	16 00	55 00
Waldo and Penobscot	31 00	8 00	4 25	55 27	40 75	15 00	9 25	—	103 25	6 00	865 77
Waldo, New Belfast Fair	13 00	23 00	89 00	21 00	69 05	—	—	—	16 99	—	365 54
Waldo, Unity Park Association	9 00	4 00	10 00	34 00	14 00	11 50	18 00	6 00	95 50	116 75	682 75
Washington, West	30 00	16 50	15 75	26 75	24 75	9 50	2 00	1 00	78 70	—	710 95
Washington, Machias Valley	12 00	—	8 75	49 75	55 75	—	3 75	—	75 00	241 50	570 00
Less 10% on totals over \$5.00	—	—	—	—	—	—	—	—	—	—	(20 37)
York, Cornish	—	10 00	42 00	—	—	21 00	2 00	—	65 00	96 00	809 00
	\$3,042 00	\$1,135 25	\$7,163 66	\$1,911 12	\$3,420 25	\$905 60	\$393 90	\$63 00	\$2,838 84	\$4,558 05	\$49,407 22

ANALYSIS OF AWARDS.

## FINANCES.

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NAME OF SOCIETY.	Amount received from State.	Receipts for Membership.	Receipts from loans.	Entry fee for poultry.	Receipts from entry fees for trotting purses.	Receipts from all other sources.	Total receipts.
Maine State Agricultural Society .....	\$ 2,500 00	\$ 580 00	\$12,500 00	—	\$ 1,854 00	\$ 17,655 69	\$ 35,089 69
Eastern Maine State Fair .....	1,750 00	5,290 00	—	—	2,177 50	—	9,217 50
Central Maine Fair .....	2,500 00	—	—	—	1,437 65	15,224 72	19,162 37
Maine State Pomological Society .....	2,300 62	45 00	—	—	—	1,135 80	3,481 42
Maine State Poultry Association .....	634 78	64 00	—	276 50	—	243 00	1,218 28
Androscoggin County .....	156 38	—	—	—	—	113 65	270 03
Androscoggin, Greene Town Fair Association .....	42 88	—	—	—	—	118 87	161 75
Aroostook, Northern Maine Fair Association .....	1,575 48	71 00	—	—	1,796 00	20,776 41	24,218 89
Aroostook, Houlton .....	879 42	25 00	2,000 00	—	324 00	15,252 93	18,481 35
Aroostook, Caribou Trotting Park and Fair Association .....	159 74	—	—	—	459 00	5,467 37	6,086 11
Cumberland County .....	537 29	20 00	900 00	—	540 00	4,678 52	6,675 81
Cumberland Farmers' Club .....	172 72	15 00	—	—	40 00	585 88	813 60
Cumberland, New Gloucester and Danville .....	179 58	—	—	—	285 90	869 76	1,335 24
Cumberland, Freeport Poultry Association .....	336 91	9 50	—	—	361 50	251 50	959 41
Cumberland, Bridgton .....	192 45	—	1,000 00	—	1,070 00	1,757 70	4,020 15
Franklin County .....	750 73	837 00	600 00	—	700 00	8,099 90	10,987 63
Franklin, North .....	156 28	298 00	500 00	—	185 00	449 48	1,588 76
Hancock County .....	161 20	—	—	—	216 25	2,226 41	2,603 86
Hancock, Eden .....	57 96	—	—	—	15 00	994 15	1,067 11
Kennebec, Cochnewagan .....	78 97	—	—	—	—	258 50	337 47
Kennebec County .....	222 67	48 00	500 00	—	—	205 00	975 67
Kennebec, South .....	144 34	—	—	—	3 75	1,852 47	2,000 56
Knox, North .....	255 96	—	862 11	—	56 00	1,101 50	2,275 57
Lincoln County .....	157 87	184 50	1,500 00	—	—	807 69	2,650 06

AGRICULTURE OF MAINE.

Lincoln, Bristol .....	33 38	25	—	—	—	134 36	167 99
Oxford County .....	1,220 07	11 00	1,450 00	—	745 00	8,373 61	11,799 68
Oxford, West .....	641 63	1,322 49	—	—	565 00	1,891 41	4,420 53
Androscoggin Valley .....	—	—	—	—	210 00	—	210 00
Oxford, North .....	218 34	16 00	—	—	227 50	952 93	1,424 77
Oxford, Western Maine Poultry Association .....	790 68	9 50	6 00	—	—	710 71	1,516 89
Penobscot, West .....	535 92	54 00	600 00	—	160 00	1,546 00	2,895 92
Penobscot, North .....	73 15	—	—	—	200 00	1,700 00	1,973 15
Penobscot, Orrington .....	47 93	—	—	—	136 25	784 70	968 88
Penobscot, Bangor Poultry Association .....	465 08	32 00	—	—	154 59	—	651 67
Sagadahoc, Richmond Farmers' and Mechanics' Club .....	41 33	—	23 40	—	—	100 00	164 73
Somerset, East .....	224 20	20 00	—	—	250 00	1,540 39	2,034 59
Somerset, Central .....	432 71	40 00	2,200 00	—	160 00	1,111 10	3,943 81
Somerset, Four County Fair Association .....	521 38	—	200 00	—	112 00	1,204 62	2,038 00
Somerset, Embden .....	36 83	—	—	—	—	55 00	91 83
Somerset, Harmony Grange Fair Association .....	35 39	90 00	—	—	—	—	125 39
Waldo and Penobscot .....	385 22	—	—	—	151 75	2,953 95	3,490 92
Waldo, New Belfast Fair .....	101 40	140 00	—	—	163 75	1,724 60	2,129 75
Waldo, Unity Park Association .....	283 30	—	—	—	360 00	991 70	1,635 00
Washington, West .....	342 09	—	270 00	—	120 00	1,444 37	2,176 46
Washington, Machias Valley .....	211 09	—	—	—	110 00	2,643 63	2,964 72
York, Cornish .....	289 90	—	300 00	—	520 00	3,218 10	4,328 00
	\$22,835 25	\$0,222 24	\$25,411 51	\$276 50	\$15,877 39	\$133,208 08	\$206,830 97

FINANCES—Concluded.

NAME OF SOCIETY.	Amount expended in improvements.	Amount expended in trotting purses.	Expenses during the fair.	Amount expended for all other purposes.	Total amount paid out including premiums and gratuities.	Value of property belonging to the society.	Amount of liabilities.
Maine State Agricultural Society .....	\$23,091 50	\$ 3,677 00	\$ 5,595 70	\$ 9,030 75	\$ 46,362 95	\$ 80,000 00	\$ 37,445 00
Eastern Maine State Fair .....	6,277 22	5,745 00	3,786 16	13,310 84	32,198 67	27,077 32	32,658 41
Central Maine Fair .....	2,363 46	4,234 80	5,435 72	3,495 97	21,966 60	—	2,266 77
Maine State Pomological Society .....	—	—	987 28	733 85	3,073 13	—	—
Maine State Poultry Association .....	—	—	619 63	—	1,545 13	1,803 57	500 00
Androscoggin County .....	—	—	—	133 35	289 05	—	—
Androscoggin, Greene Town Fair Association .....	—	—	73 56	—	153 31	—	—
Aroostook, Northern Maine Fair Association .....	4,708 61	5,600 00	8,195 85	1,122 99	25,220 15	60,000 00	13,000 00
Aroostook, Houlton .....	5,450 82	3,652 40	5,739 75	3,269 41	20,660 26	—	8,150 00
Aroostook, Caribou Trotting Park and Fair Association .....	2,100 00	2,724 00	6,028 03	—	11,539 28	32,766 65	20,000 00
Cumberland County .....	1,200 00	1,820 00	3,813 46	—	8,170 36	7,000 00	900 00
Cumberland Farmers' Club .....	113 23	178 00	325 66	77 24	802 88	1,000 00	—
Cumberland, New Gloucester and Danville .....	40 74	699 30	279 19	—	1,322 08	—	—
Cumberland, Freeport Poultry Association .....	700 00	—	179 18	—	1,569 43	1,200 00	662 00
Cumberland, Bridgton .....	1,700 00	1,600 00	175 00	—	3,984 25	3,500 00	1,000 00
Franklin County .....	3,500 00	1,750 00	2,916 00	2,000 00	12,031 50	22,000 00	—
Franklin, North .....	—	389 00	91 50	1,114 03	1,923 28	2,500 00	2,468 75
Hancock County .....	703 16	667 50	844 65	155 00	2,851 01	2,000 00	—
Hancock, Eden .....	75 00	211 00	369 06	14 00	880 81	2,500 00	1,150 00
Kennebec, Cochnewagan .....	—	—	42 85	20 00	266 55	—	—
Kennebec County .....	75 00	—	55 00	25 58	976 33	1,000 00	500 00
Kennebec, South .....	60 50	250 00	225 00	1,286 19	2,161 49	1,500 00	—

Knox, North .....	141 00	418 75	728 00	986 32	2,843 72	1,500 00	862 11
Lincoln County .....	1,262 77	225 00	382 27	775 28	2,913 92	3,500 00	2,995 26
Lincoln, Bristol .....	10 14	—	96 88	—	147 67	1,200 00	100 00
Oxford County .....	1,851 45	1,920 00	2,062 93	1,181 54	9,970 42	15,000 00	1,450 00
Oxford, West .....	100 00	1,250 00	600 00	52 50	3,658 30	13,000 00	800 00
Androscoggin Valley .....	161 89	525 00	309 91	100 00	1,497 60	3,500 00	2,200 00
Oxford, North .....	100 00	550 00	250 00	—	1,490 28	1,500 00	100 00
Oxford, Western Maine Poultry Association .....	18 00	—	232 22	212 44	1,320 72	500 00	—
Penobscot, West .....	900 00	495 00	277 00	304 90	3,354 76	6,000 00	4,500 00
Penobscot, North .....	500 00	750 00	446 85	—	1,950 00	3,000 00	—
Penobscot, Orrington .....	67 10	293 75	63 20	400 81	916 56	1,200 00	800 00
Penobscot, Bangor Poultry Association .....	—	—	626 62	—	1,327 27	500 00	675 00
Sagadahoc, Richmond Farmers' and Mechanics' Club .....	10 00	—	30 00	—	78 05	50 00	—
Somerset, East .....	200 00	570 00	260 00	400 00	2,006 30	2,500 00	1,700 00
Somerset, Central .....	315 00	400 00	1,123 34	616 74	3,444 78	8,000 00	5,200 00
Somerset, Four County Fair Association .....	414 39	807 00	854 89	1,357 25	4,349 53	7,535 91	1,338 39
Somerset, Embden .....	—	—	16 00	12 41	91 41	5 00	31 41
Somerset, Harmony Grange Fair Association .....	—	—	50 00	—	105 00	—	—
Waldo and Penobscot .....	288 11	435 00	784 93	1,450 71	3,824 52	4,000 00	1,482 40
Waldo, New Belfast Fair .....	673 81	650 00	131 25	309 15	2,129 75	1,200 00	265 22
Waldo, Unity Park Association .....	125 00	800 00	300 00	—	1,907 75	—	272 25
Washington, West .....	99 75	550 00	1,619 31	587 50	3,567 51	1,926 00	2,300 00
Washington, Machias Valley .....	274 39	794 00	862 40	257 45	2,737 87	50 00	900 00
York, Cornish .....	25 00	1,150 00	900 00	2,244 55	5,128 55	4,500 00	300 00
	\$59,697 04	\$45,781 50	\$58,786 23	\$47,038 75	\$260,710 74	\$326,014 45	\$148,972 97

FINANCES.



ANNUAL REPORT

OF THE

**State Pomological Society**

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**1918**



MAINE STATE POMOLOGICAL SOCIETY.  
OFFICERS FOR 1918

*President.*

C. C. CLEMENTS, Winterport

*Vice-Presidents.*

A. C. MACOMBER, Wilton  
SYDNEY F. BROWN, Sumner

*Secretary.*

E. L. WHITE, Bowdoinham

*Treasurer.*

T. E. CHASE, Buckfield

*Executive Committee.*

THE PRESIDENT, FIRST VICE-PRESIDENT,  
SECRETARY AND TREASURER, *ex-officio*.

E. F. HITCHINGS, Orono  
E. W. DOLLOFF, Standish  
W. C. ROBINSON, No. Anson

*Trustees for 1918.*

*Androscoggin County*—ARCH D. LEAVITT, Turner  
*Cumberland County*—E. W. DOLLOFF, Standish  
*Franklin County*—J. E. COLLINS, Farmington  
*Hancock County*—C. L. MORANG, Ellsworth  
*Kennebec County*—CLEMENT & TAYLOR, Winthrop  
*Knox County*—FRANK H. LENFEST, Union  
*Lincoln County*—W. C. FORD, Whitefield  
*Oxford County*—W. H. CONANT, Buckfield  
*Penobscot County*—ERNEST PAGE, East Corinth  
*Piscataquis County*—LYMAN K. LEE, Foxcroft  
*Sagadahoc County*—R. A. DOUGLASS, Bowdoinham  
*Somerset County*—W. C. ROBINSON, North Anson  
*Waldo County*—C. C. CLEMENTS, Winterport  
*Washington County*—MILLARD H. WISWELL, East Machias  
*York County*—C. E. FELCH, Limerick

## MEMBERS OF THE SOCIETY.

## LIFE MEMBERS.

Allen, W. H. ....	Buckfield	Gurney, F. E. ....	Hebron
Andrews, Charles E. ....	Auburn	Hackett, E. C. ....	West Gloucester
Atherton, Wm. P. ....	Hallowell	Hall, Mrs. H. A. ....	Brewer
Atkins, Charles G. ....	Bucksport	Hardy, E. E. ....	Farmington
Averill, David C. ....	Temple	Hardy, Walter M. ....	Brewer
Barrows, Greenhouse Co. ....	Gorham	Hayes, William ....	Gardiner
Bearce, Harry W. ....	Hebron	Heald, U. H. ....	Paris
Bennoch, John E. ....	Orono	Herrick, A. A. ....	Norway
Bickford, Lewis I. ....	Dixmont Center	Hinds, W. C. ....	Winthrop
Bisbee, George E. ....	Auburn	Hitchings, E. F. ....	Orono
Bisbee, Stanley ....	Rumford Falls	Hoyt, Mrs. Frances ....	Winthrop
Blaisdell, A. L. ....	Winterport	Jones, Elwyn ....	Dryden
Blossom, O. E. ....	Turner Center	Jackson, F. A. ....	Winthrop
Bowman, H. G. ....	Hebron	Keene, Charles S. ....	Turner
Bradbury, Mrs. Bert Buxton	Center	Keyser, Howard L. ....	Greene
Briggs, John ....	Turner	Lang, Ivan E. ....	Augusta
Brown, F. Howard ....	Mariboro, Mass.	Lapham, E. A. ....	Pittston
Buck, O. C. ....	Hebron	Leavitt, L. C. ....	
Burleigh, Miss Clara M. ....	Vassalboro	Lee, Lyman K. ....	322 West St., Biddeford
Butler, Charles M. ....	Wisasset	Lincoln, E. L. ....	Foxcroft
Butler, Alonzo ....	Union	Litchfield, J. H. ....	Wayne
Butman, J. W. ....	Readfield	Littlefield, Harry W. ....	Auburn
Chadbourne, C. L. ....	North Bridgton	Lombard, Thurston M. ....	Brooks
Chandler, Mrs. Lucy A. ....	Freeport	Lord, J. Merrill ....	Auburn
Chase, Henry M. ....		Luce, Willis A. ....	Kezar Falls
	103 Federal St., Portland	Macaulay, T. B. ....	Mabton, Wash.
Chase, Homer N. ....	Auburn	Martin, John J. ....	Montreal, Can.
Chase, Thomas E. ....	Buckfield		
Clement & Taylor ....	Winthrop		270 Center St., Bangor
Conant, A. A. ....	Hebron	McAllister, Zaccheus ....	West Lovell
Conant, E. E. ....	Hebron	McCabe, George L. ....	North Bangor
Conant, George I. ....	Hebron	McLaughlin, Mrs. Edna G. ....	Exeter
Conant, H. L. ....	Hebron Station	McLaughlin, Henry ....	Bangor
Conant, W. H. ....	Buckfield	Merrill, H. H. ....	Hebron
Conant, W. G. ....	Hebron	Merrill, Oliver F. ....	Gardiner
Corbett, Herman ....	Farmington	Merrill, Rupert B. ....	Gardiner
Crowell, Mrs. Ella H. ....	Skowhegan	Millspaugh, L. H. ....	Winthrop
Crowell, John H. ....	Farmington	Minot, Clarence M. ....	
Cummings, Marion L. ....	Hebron		426 Summer St., So. Portland
Dana, Woodbury S. ....	Westbrook	Mitchell, Frederick H. ....	Turner
Dawes, S. H. ....	Harrison	Mitchell & Co. ....	Waterville
Dearborn, Hall C. ....		Moody, Charles H. ....	Turner
	Hampden Highland	Moody, J. F. ....	Hebron
DeCoster, Virgil P. ....	Buckfield	Moore, William G. ....	Monmouth
Dennison, Mrs. Cora M. ....	Harrison	Moor, F. A. ....	Waterville
DeRocher, Peter ....	Bradentown, Fla.	Morse, F. H. ....	Waterford
Dirwanger, Joseph A. ....	Portland	Morse, W. J. ....	Orono
Douglass, C. S. ....	Douglass Hill	Moshier, C. M. ....	Wilton
Dunham, W. W. ....	North Paris	Newell, G. E. ....	Turner
Emerson, Charles L. ....	South Turner	Page, E. E. ....	East Corinth
Farnsworth, B. B. ....	Portland	Page, F. W. ....	Augusta
Felch, Charles E. ....	Limerick	Palmer, George L. ....	Kents' Hill
Fish, Mrs. Benjamin ....	Winterport	Parsons, Howard G. ....	Turner Center
Flint, John M. ....	West Baldwin	Patten, Mrs. E. C. ....	Topsham
French, H. C. ....	Rumford Center	Prince, Edward M. ....	West Farmington
Gardner, Robert H. ....	Gardiner	Pone, Charles S. ....	Manchester
George, C. H. ....	Hebron	Pulsifer, D. W. ....	Poland
Goddard, Lewis C. ....	Woodfords	Richards, John T. ....	Gardiner
Goding, M. T. ....		Richardson, Herbert A. ....	
	50 St. Lawrence St., Portland		82 Best St., Woodfords
Graves, Grace A. ....	Augusta	Ricker, A. S. ....	Turner
Grover, Franklin D. ....	Bean	Ricker, Fred P. ....	Turner
Gulley, Alfred G. ....	Storrs, Conn.	Roak, George M. ....	Auburn

Robinson, W. C. ....North Anson  
 Rogers, Mrs. Jeanette, North Newburg  
 Sawyer, Andrew S. ....Cape Elizabeth  
 Sawyer, Charles F. ....Hebron  
 Saunders, Ernest .....Lewiston  
 Seavey, Mrs. G. M. ....Auburn  
 Skillings, C. W. ....North Auburn  
 Smith, Frederick O. ....New Vineyard  
 Smith, V. N. ....Buckfield  
 Stanley, H. O. ....Winthrop  
 Staples, George W.,  
 904 Main St., Hartford, Conn.  
 Stiphen, Asbury C. ....Gardiner  
 Strout, Charles S. ....Biddeford  
 Supt. Maine Sanatorium Farm,  
 Hebron  
 Sweetser, F. R. ....Cumberland Center  
 Taylor, Miss L. L. (Lakeside)  
 Belgrade  
 Thomas, William W. ....Portland  
 Thomas, D. S. ....North Auburn

Thurston, Edwin ..West Farmington  
 Townsend, Mrs. B. T. ....Freeport  
 True, John W. ....New Gloucester  
 Twitchell, George M. ....Auburn  
 Verrill, H. E. ....Hebron  
 Verrill, Harry M. ....Portland  
 Vickery, James .....Portland  
 Walker, Charles S. ....Peru  
 Walker, Elmer V. ....Oxford  
 Waterman, Willard H. ....East Auburn  
 Waugh, F. A. ....Amherst, Mass.  
 Weston, Joseph .....Gardiner  
 Wheeler, Charles E. ....Chesterville  
 White, Charles M. ....Bowdoinham  
 White, Mrs. Annie ....Bowdoinham  
 White, Edward L. ....Bowdoinham  
 Whitman, L. E. ....Hebron  
 Woods, Charles D. ....Orono  
 Wright, Frederick .....Bath  
 Yeaton, George A. ....Augusta  
 Yeaton, Samuel F., West Farmington

## ANNUAL MEMBERS FOR 1918.

Additon, E. E. ....Greene  
 Bearce, H. W. ....Hebron  
 Bragger, Mrs. W. B. ....Exeter  
 Brown, B. S. ....Orono  
 Clements, C. C. ....Winterport  
 Dickey, Miss E. E. ....Greene  
 Dolley, Walter .....Old Orchard  
 Dolloff, E. W. ....Standish  
 Dolloff, Orrin .....Standish  
 Dudley, F. H. ....Auburn  
 Dunn, Chas. J., Jr. ....So. Portland  
 Eaton, S. H.\* .....Oxford  
 Emery, Wallace .....North Anson  
 Hamlin, Frank W. ....Gardiner

Laughlin, L. B. ....Portland  
 Macomber, A. C. ....Dryden  
 Maloon, W. L. ....Bowdoin  
 Philbrook, E. E. ....Portland  
 Pierce, Arthur W. ....Woodfords  
 Roberts, John A. ....Augusta  
 Savage, Will N. ....Waterville  
 Skinner, L. B. ....Dunedin, Fla.  
 Smith, Harry L. ....E. Dixfield  
 Stanley, N. D. ....Pittsfield  
 Thompson, Arthur E. ....Intervale  
 Thompson, F. B. ....Cornish  
 Walker, S. W. ....E. Dixfield  
 Washburn, C. C. ....Mechanic Falls

ANNUAL MEETING  
OF  
MAINE STATE POMOLOGICAL SOCIETY.  
CITY HALL, PORTLAND, NOVEMBER 20, 1918.

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The meeting was called to order by the President and the following reports were heard:

ADDRESS OF WELCOME.

C. C. CLEMENTS, PRESIDENT MAINE STATE POMOLOGICAL SOCIETY,  
PORTLAND.

*Ladies and Gentlemen:*

I am glad to welcome you here this morning to the annual meeting of this Society, and to encourage you in the business for the future.

The past winter was one of the worst for the fruit trees ever known in Maine. When spring opened we found a large number of our trees dead, many more injured and our crop reduced to the smallest in years. Moreover the total amount of the damage will not be known until the trees leaves out again, as many of the trees that show some life this year, I fear, will be dead next spring.

The remaining trees will need the best of care for the next few years as diseases will gain a foothold and destroy many more of the trees.

Great care should be used in buying trees to take the place of the dead ones, as very few nurseries in the eastern states escaped injury last winter. Also the question of what varieties to set and propagate should be given careful consideration, as the Baldwin our best apple was hit the hardest, and many question the advisability of trying to grow it in the future.

A movement has been started to secure a universal apple packing and grading law for the New England States. Two or three meetings have been held to consider the proposition and decide on some form of draft that would be agreeable to the growers in the several states. Another meeting is to be held here this week to complete the work started. I hope that some form may be adopted that will meet the approval of the growers and be passed by the legislature of each of the states.

The brightest thing in sight is the fact that the war has closed, and the markets of the world will again be open for our fruit. During the reconstruction of the world's markets, effort should be made to place our apples in more of the European countries as these markets when once secured would be large buyers of our fruit. This can be best brought about through co-operative business organizations, and as we already have a number of these organizations, with a strong central exchange, effort should be made to increase their number until every fruit growing section of the state is reached.

I wish at this time to express in behalf of this Society, our appreciation of the untiring effort of Maine's Commissioner of Agriculture, and the valuable assistance rendered by that department and the extension department of the College of Agriculture through their county agents. Through the effort of the Pomological Society much information has been distributed among the growers, which has tended to the improvement and development of the fruit growing industry of Maine.

Let us endeavor to secure the enrollment of every fruit grower in the State, thereby increasing the influence and work of the Society, that still greater good may be accomplished.

#### REPORT OF SECRETARY.

The year 1918 has been a year that will always be remembered. It began with dark clouds and heavy burdens, and ended with great rejoicing and courage for another year.

The Executive Committee has been called together three times during the year. The first time in Augusta January 15th, when the work of 1917 was gone over and plans for 1918 made.

It was voted to have speakers at our next annual meeting. It was also arranged to hold an annual exhibition with the other Agricultural Societies of the state.

Arrangements were made for two field meetings in 1918, dates and places for them being left with the President.

At the meeting held in Auburn February 19, it was voted to accept the invitation to hold our annual meetings in Portland. Committees were appointed to make arrangements for the meetings. The committee was called to Portland June 14 to arrange the premium lists and program.

Mr. H. L. Keyser's resignation was read and accepted at this meeting. Mr. E. W. Dolloff was elected to serve during the remainder of 1918.

The Executive Committee instructed the President to secure Hon. Wilfred Wheeler, Prof. F. C. Sears, Prof. E. F. Hitchings and G. A. Yeaton as judges at the annual exhibition, if possible.

Three field meetings were held in the summer, one at Winthrop August 27, one at Wilton August 28, and one at Hebron August 29. These meetings were well attended and much benefit was derived from the fine talks on orcharding.

Let us make the thanksgiving of 1918 one long to be remembered.

Respectfully submitted,

E. L. WHITE,  
*Secretary.*

## REPORT OF TREASURER.

### RECEIPTS.

1918			
Jan.	1	Working funds on hand, as shown in last report ..	\$ 14 49
	2	Rec'd from State Treasurer (refund of bill collected)	9 03
	8	Interest on Bank Stock .....	16 00
	8	6 months interest on Water Bonds .....	22 50
	10	from State Treasurer .....	1,275 72
	19	from State Treasurer .....	26 45
Mar.	28	from J. G. Johnson, for sale of space (1917 Show) .....	17 50
May	15	from Geo. C. Shaw (sale of apples in storage)	39 75
July	18	Interest on Bank Stock .....	16 00
Aug.	26	from State Treasurer .....	308 64
Dec.	7	from Portland Chamber of Commerce .....	805 00
	14	6 months interest on Water Bonds .....	22 50
	14	one years interest on Liberty Bond .....	40 00
	14	from Senator Hale for Special Premiums ....	15 00

## AGRICULTURE OF MAINE.

24	from E. L. White (sale of space and apples)	89 50
30	from E. L. White (annual membership dues)	25 00
30	from E. L. White (sale of space—1918 Show)	12 50
30	from Geo. C. Owen (refund—by error in his bill) .....	2 00
30	from Geo. C. Owen (sale of apples) .....	2 00
31	from State Treasurer .....	680 78
31	from L. B. Griffin (sale of apples) .....	35 55
31	from Life membership fees (due for transfer)	20 00
Total receipts .....		\$3,495 91

## Permanent fund invested as follows:

Four Shares Farmington National Bank Stock .....	\$ 400 00
Two \$500 Bonds of Stockton Springs Water Co. ....	970 00
One \$1000 Liberty Bond .....	1,000 00
On Deposit in Savings Bank .....	70 00
Due for transfer from working funds .....	20 00
Total .....	\$2,460 00

## DISBURSEMENTS.

## Order

No.		
1	Paid C. C. Clements (on voucher) for stamped envelopes ..	\$ 16 70
2	Wallace S. Ladd, printing .....	4 74
3	W. L. Wilson, sundries .....	5 01
4	J. P. Hutchinson & Co., Treas. bond .....	5 00
5	E. F. Hitchings, Executive Comm. expenses .....	6 13
6	Federation of Agricultural Ass'ns., dues .....	4 00
7	A. C. Macomber, expenses Exec. Committee .....	8 97
8	H. L. Keyser, expenses Exec. Committee .....	6 21
9	T. E. Chase, expenses Exec. Committee .....	11 33
10	Federation of Agri. Ass'ns, balance on dues .....	8 00
11	G. A. Yeaton, expenses .....	21 23
12	E. E. Hitchings, expenses, Exec. Comm. ....	8 28
13	New England Cold Storage Co., storage on apples ..	1 30
14	W. H. Conant, Speaker expense .....	17 91
16	A. C. Macomber, apples .....	8 00
19	E. F. Hitchings, expenses, Exec. Committee .....	10 51
20	W. C. Robinson, expenses, Exec. Committee .....	29 33
17	Chas. C. Clements, expenses .....	30 97
18	A. C. Macomber, expense, Exec. Comm. ....	18 70
21	T. E. Chase, expense, Exec. Comm. ....	6 30
22	E. L. White, expense, Exec. Comm. and Secretary ....	34 18
23	E. L. White, salary (six months) .....	75 00

24	A. C. Macomber, apples .....	35 00
25	E. F. Hitchings, Speaker .....	5 00
26	Wallace S. Ladd, printing .....	9 59
72	Nat'l Shoe & Leather Bank, interest on Liberty bond	3 75
73	Treasurer of State of Maine (refund acc't overpay)	8 00
27	New England Cold Storage Co., storage space .....	4 75
28	T. E. Chase, Treasurer's salary and postage (6 mos.)	13 50
29	Wallace S. Ladd, printing .....	17 40
30	W. H. Woodworth, Speaker .....	68 24
31	A. L. Tisdale, photography .....	4 00
32	C. C. Clements, expense .....	51 86
33	Jewett Printing Co., printing .....	3 50
34	Annabelle M. White, clerk .....	16 29
35	Portland Chamber of Commerce, dues .....	25 00
36	Falmouth Hotel, bill of officers, speakers, etc. ....	58 65
37	M. C. Abbott, labor, annual meeting .....	12 50
38	T. E. Chase, expense .....	20 42
39	Geo. C. Owen (5 bills, on vouchers), annual meeting .	165 41
40	W. G. Conant, apples .....	77 50
41	E. W. Dolloff, expense, Exec. Committee .....	12 25
42	W. C. Robinson, expense, Exec. Committee .....	15 20
43	Geo. A. Yeaton, judging .....	43 94
44	Congress Square Hotel, bill of officers, speakers, etc.	101 85
45	A. C. Macomber, expense, Exec. Committee .....	8 27
46	T. E. Chase, apples .....	20 00
47	H. G. Bowman, apples .....	7 00
48	W. H. Conant, apples .....	36 00
49	E. E. Conant, apples .....	37 00
50	Clement & Taylor, apples .....	65 00
51	H. W. Bearce, apples .....	10 00
52	E. L. White, expense .....	28 06
53	E. L. White, salary .....	75 00
54	Edwards & Walker, hardware .....	2 90
55	M. C. R. R., freight .....	6 41
56	R. E. Ferguson, postage .....	13 49
57	F. C. Sears, Judge, annual meeting .....	67 68
58	Bastian Bros. Co., badges .....	17 97
59	A. K. Gardner, Judge, annual meeting .....	31 53
60	W. H. Conant, Speaker .....	24 68
61	Wilfred Wheeler, Judge, annual meeting .....	36 65
62	J. S. Caldwell, Speaker .....	55 28
63	T. E. Chase, salary and expense (6 months) .....	21 48
65	Premiums, Classes 1 to 5 inc. ....	312 00
66	Premiums, boxes and barrels .....	680 00
67	Premiums, New England Show .....	360 00
68	C. C. Clements, expense .....	5 28
69	A. C. Macomber, expense .....	8 82



## AGRICULTURE OF MAINE.

70	W. C. Robinson, expense .....	7 00
71	E. L. White, expense .....	10 49
74	A. L. Newton, Postmaster, stamped envelopes .....	10 72
75	A. L. Newton, for postage .....	3 00
		<hr/>
	Total disbursements .....	\$3,073 13
	(includes \$20 for transfer) Cash on hand .....	422 78
		<hr/>
		\$3,495 91

Respectfully submitted,

T. E. CHASE,  
*Treasurer.*

MAINE STATE POMOLOGICAL SOCIETY.  
OFFICERS FOR 1919.

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*President*

C. C. CLEMENTS, Winterport

*Vice-Presidents*

A. C. MACOMBER, Wilton  
H. W. BEARCE, Hebron

*Secretary*

E. L. WHITE, Bowdoinham

*Treasurer*

T. E. CHASE, Buckfield

EXECUTIVE COMMITTEE.

THE PRESIDENT, FIRST VICE-PRESIDENT, SECRETARY AND TREASURER, *ex-officio*

F. H. DUDLEY, Augusta  
E. W. DOLLOFF, Standish

*Members of Experiment Station Council*

W. H. CONANT, Buckfield  
GEORGE A. YEATON, Norway  
HON. JOHN A. ROBERTS, Augusta

*Delegates to Federation of Agricultural Associations*

C. C. CLEMENTS, Winterport  
W. H. CONANT, Buckfield  
E. L. WHITE, Bowdoinham

*Committee on Resolutions*

GEORGE A. YEATON, Norway  
A. K. GARDNER, Farmington  
W. G. CONANT, Hebron

## WINTER INJURY TO APPLE TREES IN 1917-1918

PROF. F. C. SEARS.

One of the most serious blows which the orchard industry of New England ever received was the damage done to orchards in the winter of 1917-18.

In practically every New England state and in many other northern states, the damage was very serious.

Your Agricultural Department here in Maine has estimated that the loss in this state is a million bearing apple trees.

In Massachusetts we have not been as seriously injured, but the loss has been severe. In Franklin County which is one of our best orchard counties, there are many orchards which have been wiped out of existence, and many more have been seriously damaged.

In Vermont the case is even worse. I spent my vacation in the Lake Champlain district, which is one of the fine orchard sections of New England, and saw many cases of orchards which had been entirely ruined or so badly damaged as to be practically worthless.

Besides the damage which is already so evident, it seems almost certain that we shall see a long line of troubles in the way of weakened, injured trees which will develop in the next few years, but which will really date back to this past winter.

Apparently a number of causes conspired to make the injury so serious. Of course the primary cause was the exceptionally cold weather which we experienced, and which in our part of the country at least broke all records, and our records go back nearly a century.

Not only was the weather very severe indeed, but it came very early (being zero weather early in December), before the trees had had time to become fully dormant and when they were consequently much less able to withstand the severe cold than they would have been in January.

In addition to coming very early and being unusually severe, the cold weather was long continued, both as to the whole

period of cold weather, and as to shorter periods of exceptionally cold weather. In Amherst we had four and five days and nights together when the thermometer did not get up to zero. Such prolonged and severe weather is much harder on trees than the same amount of cold weather distributed over a longer period.

Another factor which influenced the amount of damage was the bearing of a crop of fruit in 1917. Those orchards or trees which bore heavily in 1917 were invariably more seriously injured than adjoining orchards, or adjoining trees which did not bear.

Another secondary cause of damage, though a much less common one, was too great care of the trees. In cases where trees had received especially good cultivation and fertilizing, and particularly if the cultivation had been late, or the fertilizer was rich in nitrogen, the result was to increase the damage. This is just what might have been expected since it would have the tendency to prevent the trees from ripening their wood and getting into a sufficiently dormant condition to withstand the cold.

Still another factor which sometimes helped to increase the damage was a low site for the orchard. In such cases the cold air drained down onto the orchard from the surrounding hills and the trees would be subjected to a considerably lower temperature, (sometimes as much as 10° lower) than nearby orchards on higher land.

Very wet or very dry soils were also dangerous. The wet soils doubtless tended to prolong the growth of the trees, while the exceptionally dry soils did not supply enough moisture so that the trees could replace that given off to the air.

A last factor which was very important in determining the extent of injury was the variety. Some varieties like Fameuse, Spy and McIntosh suffered very little, while other varieties, notably the Baldwin, were very seriously injured.

Turning now to the question of remedies to be applied to the injured trees, it would seem that three or four lines are open.

1st. The trees should be thoroughly pruned. If a third or even a half of the top is cut away it will certainly help the root system to support the balance of the top and to grow a new top.

2nd. All fruit which sets on these trees in 1919 ought to be

removed. It is, of course a well recognized fact that the producing of fruit is a very serious drain on the tree and it ought not to be allowed to attempt this in its present weakened condition.

3d. The soil in the orchard ought to be well cared for. If it can be cultivated that ought surely to be done. And whether it is cultivated or not it ought to be well fertilized with well-rotted barn manure or with 200 or 300 pounds of nitrate of soda per acre.

4th. Lastly, it goes without saying that the injured orchard should be sprayed. This is true of any orchard at any time, but to allow these weakened trees to be attacked by insects and fungi would be suicidal.

Looking further into the future and attempting to outline a policy which will assist in preventing a reoccurrence of such a catastrophe, several suggestions present themselves, largely hinging on the factors which caused the trouble.

In the first place we should undoubtedly exercise more care in choosing orchard sites. We should see that the soil is neither too light nor too heavy, that it is if possible, especially adapted to the variety we wish to set, and that the situation is not one which will allow the cold air to settle on the field from adjoining areas.

We should next look more carefully to the culture of our orchards, neither giving them so great care that they suffer from too much growth, nor neglecting them so that they are too much weakened to withstand unfavorable conditions.

And lastly in the choice of varieties we ought to use as freely as we can those sorts which have been freest from injury. It seems to me however, that you Maine orchardists ought to consider the matter very carefully before you decide to shut out the Baldwin from your future plantings. It has so long been your standby, and is so satisfactory in most ways, that it is a question whether you can afford to drop it. Moreover if it is to be another century before a similar winter occurs you and your descendants can make enough more out of the Baldwin than you would out of the Stark and the Ben Davis, so that you can afford to have your orchards killed out and start again.

FRUIT UTILIZATION.—AN INVESTIGATION FROM  
THE FARM STANDPOINT.

J. S. CALDWELL, *U. S. Department of Agriculture.*

*Mr. Chairman and Members of the Society:*

I want to express my appreciation of the privilege and the opportunity of being with you. I am distinctly a tenderfoot in this portion of the fruit growing territory of the United States, because it happens that my experience has lain elsewhere, and I am conscious that some of the things I shall say will necessarily not apply to your particular conditions, because they are based on experience and observation elsewhere.

I am to speak to you on the work which we have been doing during the past year in the office of horticulture and pomology, bureau of plant industry, in the matter of fruit utilization. I might say by way of explanation, that my own connection with that work is less than a year old;—that while a number of projects of that character have been carried on for some years, the work was reorganized the first of last January, and we began the building of a laboratory building in which we took up a considerable number of projects in the utilization of both fruits and vegetables under a great many difficulties, as you know. Building of any character whatsoever at this time necessarily involves considerable difficulty. The equipment of a laboratory building in particular is perhaps a little more difficult than the construction of any other type. We have also labored under difficulties due to exasperating delays in securing necessary apparatus, as well as with a shortage of man power. So what I shall say is necessarily a statement of beginnings, rather than such a presentation of completed data or finished work as I should like to make. The nature of the work that we have been doing has been determined very largely by conditions. While we contemplate in the future taking up all the economically possible products which may be made from the apple as well as from other fruits, we have been concentrating our work during

the past year very definitely upon those materials which may be called staple food products, leaving aside for the time being such things as cider, cider vinegar, and a number of minor products made from other fruits, for the reason that these things are to be considered as accessories rather than staple foods. Also we have had brought before us a great number of questions arising out of the present general interest in food conservation, and we have been forced of necessity to spend considerable time and effort in answering questions on matters of immediate importance in connection with the food conservation campaign, and that fact has also contributed to the rather unsatisfactory progress which some of our work has made.

In the development of this work, we are confining ourselves definitely to what I may term the strictly farm point of view, that is, we are considering such horticultural manufactures, such processes and methods, and the making of such products as the farmer or fruitgrower with an orchard of ordinary size, or a group of fruit growers working in conjunction, may logically expect to be able to undertake, and we are leaving aside those special products which of necessity demand a commercial organization with a large capitalization, which the ordinary group of farmers cannot bring together, and would not be justified in undertaking to establish. Our point of view is that of the farm, and with that object before us we have been studying during the past year methods of canning and of drying practically all farm products, and in the matter of apples, not to speak further of those other things, we have been giving special attention to the question. What may the farmer undertake to do in the working up of his surplus crop, the disposing of his undesirable or low priced varieties by making them into food materials?

We have worked over first of all rather thoroughly the question which always comes up in the beginning, the question of the cannery versus the evaporator. It is my observation that when a community of fruit growers, or a fruit growing district, begins to talk about some means of utilizing its surplus material, working up its low grade stuff, it hits primarily upon the cannery as a means of doing it. I have been giving considerable attention to the degree of success of canneries as assistance to apple growers, and that experience has been in several different districts of the United States, and I believe I can sum up a

world of wisdom in one word for any group of apple growers that is beginning to think of the construction of a cannery, as a means of helping out its situation. That word is "don't." I mean to say by this that the history of canneries in the apple growing districts of the United States has been, in so far as my personal observation and study of it goes, a particularly disastrous one. I have been paying attention to this matter in the northwestern states because I recently worked in the state of Washington for two years, and I have followed more or less fully the history of some thirty-five canneries which were established in California, Oregon, Washington and Idaho in fruit growing districts, primarily as a means of helping out a limited outside market, relieving congested transportation and all the other unfavorable conditions which may combine or occur singly to drive the fruit grower to thinking about what he is going to do with his product. It happens that the Bureau of Markets subsequently reported on some twenty-three canneries in that same district. It was found that out of the two groups, only two could be said to be unqualifiedly successful. Those two concerns, it happens, were rather large; that was one factor in their favor. A cannery is a thing which can not remain of constant size, it either becomes bigger or it shrinks until it finally becomes nothing more than a spot in space and vanishes. These two successful canning plants were rather large in the beginning and had a considerable number of favoring factors,—clearly visible, obvious, favoring factors which contributed to their success. Of the remaining thirty-three some six or seven were carried along at a loss year after year, remaining in business because the organizations which conducted them were also conducting a fresh fruit business, selling apples and other products as far as they were grown in the territory, so that the profits of the fresh fruit business carried the loss of the canning business and kept the whole thing afloat. The others had had a life of two or three or five years, then had been closed up. That is a rather despondent view of the situation. Yet, the same condition that I have spoken of as existing in the northwest states, exists also in various other sections.

There are a good many things which are absolutely necessary to the success of any cannery. The first of these is unquestionably a considerable variety of products to be handled, and I say



that for this reason—the investment in modern, up-to-date equipment for a cannery of any size is very considerable, and the depreciation upon that equipment is rather high. The life of the equipment in the canning plant is not more than eight or nine years and if we allow it that length of life a good deal of it will have been replaced in repairs during that time, so that there is a high first cost and a rapid deterioration, constituting a heavy overhead expense, to be taken care of. If that overhead is going to be successfully carried it must necessarily be carried by a rather long operating season. A long operating season means two things. It means a considerable variety of products to be handled, and it means that those products must so succeed one another through the season that the plant is open all the time, because you cannot work four weeks in July with peaches, and shut down and begin and work six weeks in October and November with apples and hold you labor together. It will be gone to some other occupation. So that where a cannery is going to succeed it must have considerable variety of materials coming in uninterruptedly. There are very few purely fruit growing districts, no matter where they are located, that have a sufficient variety of materials to fill in a season solidly because apples, peaches and berries, even with apricots and prunes to help them out, do not follow in unbroken succession. This necessarily means the growing of vegetables to fill in those gaps between the fruits and the berries, consequently it means that the section which is going to have a flourishing, prosperous, profit making cannery, is going to be a rather diversified horticultural territory, going into the growing of a considerable number of vegetables as well as fruits. The conditions which make that possible are not present in very many portions of your state.

There are some other considerations which make the cannery a rather dubious investment for the grower. In the first place, canning is a highly skilled, technical occupation, not a "thing that can be picked up." And if standard products are to be made, and if losses of material through imperfect, faulty treatment in canning are to be kept down to a minimum, as they must be, it means the employment of a man possessing considerable technical skill, and it means of course paying a corresponding salary, thereby increasing the overhead cost. It is also true that every new cannery has a problem before it in the marketing of

its product which is distinct and separate from the problem of every other cannery whatsoever. It has to establish a reputation for its goods, just as the maker of a new brand of shoes, of clothing, or of hats, has to establish a reputation for its goods, and it comes up against the fact at the outset that every purchaser of canned goods buys by name or maker's name almost to the same extent that you and I will buy by name in getting our favorite brand of smoking tobacco. That same thing prevails with canned goods, and the person who goes to work to build up a cannery business has also the problem of establishing a reputation for his product. And that is a task which is going to take him several years. During those years there will be not only no income but there will be a steady outlay in the form of advertising, in material given away to wholesalers and retailers by way of samples, in introducing his goods and making people acquainted with them. Now most farmers and most farmers' organizations cannot undertake a long term proposition of that sort involving an outlay year after year, without some immediate return therefrom. For these reasons and others which are obvious from what I have been saying, it is rarely the case that even the largest grower or even the most flourishing organization of growers can successfully undertake the installation of a cannery to take care of their products. Canning is a highly specialized industry requiring large capital for installation, a wide range of products for maintenance, and expert knowledge in operation. Hence it has passed into the hands of specialists.

That of necessity has driven us over, in thinking about this matter from the farm point of view, to other aspects of the making of fruit products, and we have been working them over rather fully as the making of apple butter, apple jellies, apple jams, etc., and the drying of fruits. Now I find it is generally true that people are somewhat skeptical when one mentions the dried apple, regarding it as a lowly and humble and altogether unhonored member of our list of food products, but as I have worked upon this matter for several years it has risen very decidedly in my estimation. In several districts of the northwest I have seen the establishment of evaporating plants bring the horticultural industry of an entire district over from red ink to the right side of the ledger within a couple of years. I have also given considerable study to the possibility of market-

ing such products, the cost of production, and the size of the plant which can be profitably built and operated, and the result has led me to believe that at the present time, and certainly for some years to come, the farmer who is confronted by the problem of an acreage of undesirable varieties which do not sell well on the market, or of large quantities of low grade fruit which he cannot dispose of profitably, had best think of evaporation first of all as the means of handling that material which involves the lowest outlay of money for taking care of a given volume of material, and which offers the most assured promise of a return uniformly and steadily year after year from the money which he invests. I say that for the reason that the evaporation of fruit offers possibilities for tying three or four other side lines up with it, and consequently enables a more complete utilization of the whole crop than it is ordinarily otherwise possible to make. The three or four things that go along together in evaporation, the things which I have foremost and most prominently in mind, are the utilization of peels and cores and small apples which are not fit for other purposes, either in the making of cider or cider jelly, or if they are in a district which has berries, in the making of apple base jam (I will explain that in a moment), or the making of straight apple butter. War conditions have tremendously increased the demand, and greatly increased the price for these two or three apple products which I have just been naming. The demand by England at the present time and during the past two or three years, for jam and jellies, has as most of you know, been tremendously ahead of the supply. We have not in this country for the past two or three years gone outside our own borders very far with such products. While a good deal of those materials have been made in the fruit growing districts they have sold within the United States. The outside markets have become acquainted with those products within the past two or three years and are calling for more of them, so that a really promising outlook for a foreign market in those products is in sight.

I have mentioned apple base jam a couple of times without explaining what I mean. Some four or five years ago there began in the northwest the making of jams which were a combination of apple and berries,—which were frankly and openly mixtures, not camouflaged mixtures of small quantities of apples

with berries, as in the sort of thing we have had on the market for many years, but the frank, open combination of 51 per cent by weight of berries with 49 per cent by weight of apples. That gives a sufficient quantity of pectin to give the jam a desirable consistency, and with raspberries or blackberries the apple flavor is entirely suppressed, so that the product has a distinctive flavor and odor of berry jam, and such products are really surprisingly good. Introduced on the market about four years ago, the demand has grown tremendously so that I have had in my office within the past two months a dozen inquiries for new sources of supply, the visible stocks being cleaned up and the purchasers desiring to have more. For any territory which grows berries in any quantity along with apples there is, as one possibility, the making of that combined product which will absorb immature, blemished, and otherwise unmarketable apples at a good price. But the business is not one of course which can stand long by itself.

*Dr. Woods:* Do they have to be made while the berries are still fresh or can their manufacture extend over a period of time?

*Dr. Caldwell:* The custom has been,—I have the northwest particularly in mind,—the custom has been to put berries in cold storage. That is rather an interesting story to one interested in berries. They are simply put in barrels without any addition whatever of sugar, six or eight inches of berries on the bottom of the barrel, then a lump of ten pounds or so of ice, then another six inches of berries, another lump of ice and so on until the barrel is full. Then they are shipped into cold storage where they can be held for an indefinite time. In a few cases the gap between seasons is bridged in another way, in that the apple material is dried (that is particularly the case with peels and cores) and carried over to the berry season and the berries used fresh. But that has not proved as satisfactory as working the other way round,—holding the berries in barrels in storage until the apple season comes on, then working up all the material while fresh.

Another possibility which is distinctly promising is the making of cider jelly simply by concentrating the fresh apple cider directly it is made, without any addition of sugar, by boiling to such concentration that it sets into jelly as it cools. As this is

ordinarily done, it requires a concentration to about one-seventh the original volume, about seven gallons to one, simply because the proportion of pectin in the apple juice is low, not very much pectin being carried out of the fruit into the cider in pressing. One simply has to continue his concentration until the amount of pectin is raised sufficiently to give a jelly. We have been making some jellies (this was done during the last season, a year ago) by using very small apples, peels and cores from the evaporator, and pomace from the cider press. That mixture of material, after running it all through the apple chopper of the cider mill was pressed, then returned into a large vat with a steam coil at the bottom and heated up practically to boiling after the addition of some water, kept a few degrees below boiling temperature a couple of hours, then taken out and pressed again. Notwithstanding the fact that considerable water had been added to the mixture, we extracted so much pectin from the fruit with the hot water that we could make a satisfactory jelly which had all the characteristics desirable to the housewife, that stood alone and quivered as though it were going to fall down and didn't, and cut cleanly instead of stretching, and tearing, by concentrating our material to only one-sixth or two-elevenths of its first volume. Such cider jelly is in very strong demand at the present time, with no indication that the demand is going to decrease. But this is another thing which like the making of apple butters and jams cannot be expected to stand on its own feet, except in localities which have tremendous quantities of material and pay a very low price for apples, hence are able to operate a large plant for a relatively short period of time with very cheap material. Those two things, however, can be tied up very practically with evaporating, since either one of them or both furnish a means of working up the material which otherwise is not fit for drying and cannot be marketed in any other form.

In so far as I can learn, your state, unlike New York, has never seriously taken up the drying of your fruits, and I am not sure that I understand at all clearly the reasons why that is the case. I do not know whether it is because your varieties are wholly or largely different, whether it has been because of pre-vaillingly high prices in the markets year by year, so that there is not the necessity for clearing up low grade, unmarketable prod-

ucts, or whether the fruit is somewhat widely scattered, so that it is not possible to get together such quantities as were thought to be paying, or whether some or all of those reasons with still others are operative. I am going to ask your chairman if he can give us an idea as to that.

*President Clements:* I should say that there isn't enough in one particular section to get together to make it a paying proposition.

*Dr. Caldwell:* I wanted to know whether this was applying to your territory? I had the feeling of course that that was the controlling reason why evaporators had not been developed in this territory.

*Dr. Woods:* That is certainly the reason as regards potatoes.

*Dr. Caldwell:* Now as to that, we have studied rather closely in New York, Washington, Oregon, Idaho, and the Northwest States generally, in Arkansas and Virginia, the possible size and type of evaporator, the first cost investment which can be made, the capacity, and have gathered considerable information in regard to it. On the matter of cost or type of evaporator, I might say a word or two a little bit aside. The past two years have seen the blossoming of the most tremendous crop of evaporators that this country ever had. The reason has been of course, the nation wide food conservation campaign, and the demand for saving every scrap of food material. A large number of perfectly honest inventors, a large number of dishonest promoters, and a large number of fellows who were more or less a compromise of those two things, with or without qualification, have seen in that campaign an opportunity to market new types of equipment, so that there have been put upon the market and are being promoted at the present time, I do not know how many new types of apparatus, but I have in my office descriptive matter in regard to several scores of all sizes, styles and types of machines to be operated on a kitchen stove, up to affairs handling a good many tons of product daily. We have made as much of an observational study of these new devices as we found it possible to do, particularly where they were being offered directly to individual fruit growers or fruit growers' organizations, and I have two or three things to say in regard to them. First, it is not clear to me that any one of these devices offers such a tremendous advance over what we already have, that the

grower is justified in putting his money into them. There are plenty of them which turn out good products it is true, but those good products are due to care employed in the selection of material and to the fact that somebody broods over it like a hen over a single chicken, while it is being dried, watching over it and turning it over a few times. That is to say, the excellent product is due to care all the way through, rather than to anything that is inherent in the evaporator itself. In the second place, those machines, as would be the case with any machine which came newly on the market now, are excessively high in their cost of manufacture. The cost is not only high now, but the first purchasers of any new type of machine usually pay more than their share of the cost of putting up the plant for producing them, the cost of the first advertising work and all the rest of it, so that practically all these machines are prohibitively high in their cost, as compared with the amount of product they will handle hourly, daily or weekly. In the third place a great many of those devices are distinctly half finished or imperfect, having been hurriedly thrown together to put on the market without the experimental trying out that any new device ought to have before it is sold to people. Many of them have obviously a lot of imperfections, things that have to be changed or done over again before the machine will work properly, so that while some of them are promising, none of them can be said to have been tried out thoroughly enough for one to say definitely what they are going to be like in the matter of operating costs. So that while we have worked over the new drying equipment offered on the market as fully as possible, getting all the data in regard to their operating cost, the character of the product it is possible to make, and all the rest of it, I feel that I cannot do otherwise than say, go very slowly and demand detailed cost sheets before thinking of investing in any of them.

That throws the discussion back to already existing non-patented types of drying equipment which are open to be built by any one who has the inclination and the requisite skill with tools. We have been employing three such devices the past year at Washington, and have dried upon each of the three, practically all the fruits and vegetables which it would have occurred to anybody, anywhere to dry under any circumstances, so that each has been given a rather thorough trying out with a wide

variety of materials. We have secured rather detailed information in regard to the quality of the product, the behaviour of the various materials under different drying conditions, and have paid attention to every feature that would come into question when one is attempting to decide whether this or that type of dryer is best suited to his purpose.

In our publications and in our talks with growers who are interested in the subjects, we are confining ourselves as a result of that work, principally to two types of driers, and the question whether we shall recommend one or the other, depends upon the answer to the following question,—What varieties of materials does the grower have to handle? In those districts which have only apples to handle and which would be expected to dry nothing else, we have no improvement to offer, no new device to offer to replace the kiln or hop-kiln drier familiar to all of you who have been in western New York or the apple drying district of Pennsylvania. It has been greatly perfected in a great many respects, as any drying device must be, as the result of use year after year by growers, and from the economic point of view, in cost of operation per pound or ton of material which it turns out, and it successfully meets and puts out of competition any other type of dryer which we have at the present time. The objection has often been made to it that the product which it makes is of low grade. That is a matter purely and simply of the skill and intelligence and care of the operator, and not a matter of the drier itself, since it is possible to turn out with the ordinary kiln drier as satisfactory products as could be made with any other type which I have used, and I have seen or used some score or more at one time or another in my experimental work.

Where apples are the only material to be handled, or if the vegetables to be handled are leaf materials such as cabbage, the kiln drier is the cheapest and most satisfactory type of drier which can be built. If other materials such as peaches and berries and vegetables, such as potatoes, carrots and the root vegetables are to be dried, the kiln evaporator does not satisfactorily meet the need,—for the reason that some of those materials which I have mentioned are of such a nature that they cannot be piled as thick as is necessary to be done on the kiln floor. They must be handled in rather thin layers, and gently because of



their delicate nature, and consequently we have to resort to some type of tray drier, employing trays on which the materials can be spread in thin layers and can be turned. Where one wants a general purpose drier which will handle these various materials, we are finding that the so-called prune tunnel type of drier, a drier which came into existence in the northwestern states primarily for the drying of prunes, and which has spread up and down the Pacific coast, is gaining more or less widely in use as the best all-round general purpose drier.

The prune tunnel drier owes the name "tunnel" to the fact that the drying unit is a long room, usually about twenty feet in length, some six feet in height and three or four feet in width, with one end higher than the other, so that a tunnel might be represented by tipping up this desk at one end some two feet; the inclination of the floor and ceiling is one and one-half to two inches to each foot of length. That pitch of the entire room off the horizontal gives this result,—a furnace which heats the whole device is placed under the lower end and the warm air rises through a hole in the floor above the furnace, coming in at one end, the low end of the room, passing along between the inclined floor and ceiling to the upper end, and being allowed to escape there. That gives a steady flow of air through the device from one end to the other. As a result of that fact two or three things may be noted. The trays on which the material is spread are carried on runways, which are offset at the lower end over the entrance for the air in such a way that the edges stand out one above the other. The rising column of warm air is broken up by the edges of the trays, follows along over the tray and runs all the way up finding a series of openings between each pair of trays. The trays are pushed into the tunnel, the edge of each tray coming against that preceding it, so that the tunnel when filled really consists of a series of shelves three or four inches apart formed by trays that let air pass up between them and escape at the opposite end. The result is that one has always between the two ends, the upper hot end and the lower cool end, a difference of some 25 or 30 degrees in temperature, which permits the putting in of the most delicate material at the upper end at a temperature which will do it no damage, while at the lower end directly over the furnace the temperature is as high as the partially dried material can be subjected to. The prin-

ciple of operation is simply to shove things steadily along down toward the lower end, putting it in at the upper and cooler end and taking it out at the lower. We have found with that device, which automatically gives steady and increasing temperature as the material dries, we have gotten uniformity of results and standardization of material which we have not been able to secure with a considerable number of other devices, some of them quite complicated, which we have tried at one time or another.

*Dr. Woods:* That gravity method works better than the kiln floor or fan driers?

*Dr. Caldwell:* There is this difficulty with the latter equipment which employs fans for driving the air through the material. In the first place a very small percentage of our farms, about two and one-fourth per cent. as nearly as I can ascertain, are equipped with electric currents. In many places in the rural districts where the fruit is produced the current is not constant, merely a lighting current at night, or is prohibitive in its cost if used for this purpose.

*Dr. Woods:* We have a gas engine.

*Dr. Caldwell:* Gas engines of course offer another possible method. This fact is true, the cost of power is very considerable in many districts. This is further true,—we have found in using air currents of various velocities, that where we employ a temperature as high as can be used without danger to the fruit, and give a rate of air movement or breeze over the fruit of some five or six miles an hour, we get a drying which goes on as rapidly as the water can diffuse out from the interior of the piece to the outside to be carried away. We find when we speed up our air movement at a drying temperature of 142 degrees for illustration, to nine or ten miles an hour, the current of warm air is carrying away the moisture from the surface more rapidly than water can diffuse out from the interior of the pieces, so that the surface is being dried off while there is still quite a good deal of moisture in the interior. The moment that happens it is just the same situation as when we have a stiff breeze and sunshine for a day after a rain; a crust forms on the surface and delays the drying of the ground beneath, so that the inclined floor is just what is needed, with the temperatures ordinarily occurring outside, we can get a sufficient difference of temperature inside

and outside to keep up a steady air movement of five to six miles an hour, over the material from beginning to end at the drying period. Now, if the trays are properly arranged, and offset so they do not present any obstacle to the movement of the air, so that it can come up and flow through between the successive trays from end to end in the device, just as it flows up a chimney, we get a steady uniform air movement through the whole process which does not cost us anything,—the buoyancy of the air doing the work. Taking the economic features into consideration, that does away with the necessity of the use of the fan. Where apples with other materials are to be handled we believe that this tunnel device, which I have described, is about the most satisfactory, low-priced device which we can recommend to the grower. It has this further advantage that it may be strictly a home-built affair. It is flexible, can be made of any size that we may desire, from a single tunnel carrying up a ton at a load, and it can be fitted into an existing building with very little modification either of framework, floors or anything else. So that its compactness, its cheapness, and the fact that it is a home-made device, as well as this automatic feature of regulating temperatures which it offers, are very strong factors in its favor.

In this matter of the drying of apples our work in the making of these products is coming more and more to the study from the variety point of view. Now we have some general information in regard to the quality of the product made from various apples, the color of the product being the thing which the market pays especial attention to, and we have information as to the sort of products with regard to appearance and the yield of products that we get out of each of some ten or twelve varieties. We have extended that work during the past season and have dried some quantities of 110 varieties of apples grown on the experiment station farm at Arlington, Virginia, and have some fifteen or twenty more to work up before we have finished the season. Those varieties, some 140 all told, cover pretty nearly the whole range of apples, early and late, which can be grown in the vicinity of Washington. We shall have for these 140 varieties data as to the yield of product, the character of that product, its appearance and market quality, its chemical composition, its sugar content, its behaviour in cooking, baking, and various uses to which the evaporated apple could be put,

and we shall very materially supplement our present knowledge of the behaviour of varieties with that piece of work. We are finding what was known in a general way before, that while the early summer varieties may be generally unprofitable for drying, that they give as a whole almost without exception, rather light, white-colored fruits, having the pleasing appearance which is demanded on the market, so that while the yield is low the market price of the fruit is good. I might also say that the market recognizes three general classes of evaporated fruits, the white, the medium and the dark stock. The Baldwin has long been the standard for the white stock group of apples, with the Ben Davis type running a close second; those varieties, while some of them are less desirable for other purposes, are esteemed in the markets because of the white color of the stock which it is possible to make from them. If you have an apple low in sugar content, and containing very little pigment or coloring material, it is possible to make a beautifully white product from it. As the sugar content increases or as the amount of pigment substance present increases the color you are going to get a yellowish, golden or even dark stock. Now it is true in a general way, that the sugar content of fruit is directly indicated by the color of the dry product made from it. We have found out the interesting fact this summer that this is not always true, that while it is true in a general way that an apple high in sugar content will give a somewhat golden fruit, nevertheless some of the extremely early summer varieties notoriously low in their sugar content, give a fruit which so far as its color goes, is indistinguishable from the product made out of Grimes Golden or Rome Beauty, or one of the relatively high sugar content groups. The reason given is that the intensification of color, due to pigment present which occurs in drying, looks precisely like the intensification of color produced by the sugar content. So that criterion which has been employed in the markets absolutely breaks down. I have on my office table two apples, both of them rich dark golden, one of which gave a yield that was the heaviest in the whole list of 110 varieties thus far dried, and the other was about fifth or sixth from the bottom of the list.

*Question:* What was the high yielder?

*Dr. Caldwell:* It was down in our records as Roxbury Russet. That was rather surprising for further south where I have

looked into the same matter I have found that Jonathan, Grimes Golden and Rome Beauty usually came well up toward the top of the list in yields. This list gave me several surprises. For instance, Dicky, an apple which is practically unknown gave the yield of 16.6 per cent. of dry stock and Tolman gave a yield of 17 per cent., Winesap down to 16 per cent. and Stayman Winesap also about 16 per cent. So that we have had of course coming in there the factor of variation in sugar content and solid content with season and locality.

*Dr. Woods:* What is the product worth?

*Dr. Caldwell:* At the present time fourteen and one-half to sixteen and one-half cents per pound. From average stock one will get a yield of 225 to 275 pounds as extreme limits. These 17 per cent. figure yields were about 300 pounds but vary. With 29 varieties of which I dried several tons, each under experimental conditions in the northwestern states, I found yields ranging, when the apples were prepared in the ordinary factory way, from 245 to 298 pounds so that one can take 260 to 265 pounds as a fair average. In New York with the Baldwin 250 pounds is considered an average, although it must be said that a great majority of makers have had somewhat greater yield.

*Dr. Woods:* What is the cost to get them ready for the market, how many hours?

*Dr. Caldwell:* I can only answer in terms of labor units,—hours. In the matter of peeling with any one of the 415 standard machines we are using at the present time, an operator ought to turn out somewhere between 60 to 75 bushels of apples in a nine hour day. That is a fair day's work.

*Dr. Woods:* About a ton would be a fair day's work?

*Dr. Caldwell:* That is somewhat more than a ton, a ton and a half to a ton and three-fourths. I have seen many reach 75 bushels a day right along day after day throughout the season. If the apples are of average size and quality, two trimmers following with knives taking off the bits of skin, worm holes and imperfections of that sort, will keep up with that machine. Forty bushels is a fair day's work for a trimmer in moderately good stock. Of course every increase in worminess or the use of an irregular, knotty variety, anything of that character, will cut down the size of the day's work, but one parer and two trimmers constitute a team and would be responsible for 75 bushels a

day. Two men will take care of the bleacher, keep the slicing machine in order and repair, take the product away from the machine, and put on the floor or on trays, look after fires, as the work becomes automatic after the trimming is done, because the slicing is automatically done by machinery.

*Question:* If a man could have the apples given to him he could come out pretty near even?

*Dr. Caldwell:* In the northwest, to give you some figures, in two or three districts, with a labor cost of \$2.50 to \$3.00 per day, the seven or eight plants from which I secured figures, were producing white stock at an average cost of not more than seven cents per pound, that was the extreme high figure in the small plants where of course the overhead was higher, and selling that stock at thirteen and one-half to fifteen cents as they did last year, wouldn't you say they broke a little bit better than even? We possibly could not duplicate that producing cost this year. I question whether it could be done. It is running higher in these plants, eight to nine cents because of the great shortage of labor, but there is still a margin of safety of about six and one-half to seven cents a pound. The working unit is in no case handling less than five tons per day and some of those plants are handling three or four, or ten times that amount. In the same plant the cost of operation is necessarily, inevitably going to be higher, of course. I have never recommended the establishment of a drying plant where the quantity to be handled is less than four to five tons per day, unless there were exceptionally favorable conditions for hooking up with the making of cider from small apples, and the peels and cores, and the further use of the pomace in making jelly, so that the income from the use of those materials would help carry the operating expense. I do not think it is worth while to talk about drying under our present conditions, certainly where the total amount of fruit to be handled one year with another will run under something like 300 to 350 tons, that is, an amount such as to give four to five tons a day during an operating period of 60 to 80 or 90 days. New York plants of similar size are making a profit, but doing so, so far as I am aware, only where the owners' family are doing much of the work. If the labor must be hired, I certainly would not advise any one to undertake the work with a unit smaller than five tons with the expectation that he would come out ahead

in the long run. The prices now prevailing are of course the top notch figures for a good many years.

And now just a word as to what may happen in the immediate future,—the prospect for the future markets. I do not foresee any likelihood of a material drop in the price of any food material as likely to occur in the immediate future, with the exception of course, of the grains. The demand for our dried fruit for the past two years has been of course almost wholly for our home use. We do not even yet know fully what has happened to the orchards of France, or to what extent fruit from this country will replace that loss. But we do know a good bit about the probable future distribution of our product. Prior to the war Germany took almost exactly one-half of our exports of evaporated fruits, the Netherlands took 27 per cent, Belgium five and one-half per cent, Denmark three and seven-tenths per cent, United Kingdom three and four-tenths per cent, Sweden three and one-fifth per cent, and all others about seven per cent. So that three-quarters of our entire exports, which may be termed three-quarters of our entire production, went to Germany and the Netherlands. About one-half of Germany's purchases were resold to Russia and the Scandinavian countries. This business is not lost. Germany's purchases in this country for her own use will undoubtedly be resumed; those from the Scandinavian countries will come to us direct; while that which will ultimately happen in Russia after the present conditions there are ameliorated we can only conjecture. But we shall have coming directly to this country a large part of the trade which she formerly enjoyed. There is this further fact with respect to the markets for dried products, that the conservation campaign of the last two years, and of this year in particular, have introduced our own people to these products as has never been done before, and hundreds and thousands of people that never made use of any dried product other than dried prunes have been searching for, and purchasing these dried materials where they were able to find them, for use in their homes. The quality of the material on the market the past two years has fortunately been good and the general reaction of most people has been favorable toward such products. Consequently we are having now, and are going to have for the future, a very materially increased consumption of such material here at home. Under our present conditions

I do not think that 75 or 80 per cent. of our production in the future will go into the foreign market, only 25 per cent. of it being consumed here at home. I am sure that with a satisfactory quality of products turned out and put upon our interior markets we shall be using not 25, but 35 to 40 per cent. of the entire product. So that I expect in a word the increased demand here at home from our home people, to stabilize the market for these products while the reconstruction period is passing and while the re-establishment of our markets with foreign territory is going on. I do not think the future of the dried fruit market, or any question as to what is going to happen to the dried fruit-maker, or producer who puts his money into the plant, need worry anybody very seriously. Our present prices will decrease somewhat, but I do not see any prospect whatsoever that they will go down to the limit of cost of production and where they were ten or a dozen years ago.

#### MAINE STATE POMOLOGICAL SOCIETY.

Whereas, through the initiative of the Maine State Pomological Society, the Legislature of 1909 made an appropriation for the purchase of a farm in the apple growing section of the State upon which scientific investigations upon orcharding should be made by the Maine Agricultural Experiment Station.

And, whereas, the results already obtained have been of much benefit to the orchardists of the state.

And, whereas, the most fundamental and far reaching studies must, from the nature of the long lives of trees, be extended continuously over long periods of years, in order to throw light upon such obscure questions as apple propagation and breeding.

And, whereas, because of the diminished purchasing power of money, the Federal Funds, from which the Station has been able to carry on these studies, are inadequate for the continuance of the work.

And, whereas, the stopping or seriously curtailing of these investigations would result in loss of time and money thus far expended.

Be it resolved, that the Maine State Pomological Society hereby places itself upon record as approving the work already done



and begun, and directs its Executive Committee and Representative upon the Experiment Station Council to work with the committee of the Station Council in bringing the needs for this work to the attention of the next Legislature and in securing an appropriation that will insure the continuance of these investigations during the next biennium.

Whereas, the Maine State Pomological Society has been entertained by the City of Portland, through the Chamber of Commerce and Portland Farmers' Club,

*Resolved*, That we extend to these bodies our thanks for all the courtesies shown us.

*Resolved*, That we thank the fruit growers from out of the state for bringing their exhibits to us, and assisting in making this show the success which it has been.

Respectfully submitted,

G. A. YEATON,  
A. K. GARDNER,  
W. G. CONANT,

*Committee on Resolutions.*

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