

MAINE STATE LEGISLATURE

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PUBLIC DOCUMENTS

OF THE

STATE OF MAINE

BEING THE

REPORTS

OF THE VARIOUS

**PUBLIC OFFICERS
DEPARTMENTS AND
INSTITUTIONS**

FOR THE TWO YEARS

JULY 1, 1922--JUNE 30, 1924

AGRICULTURE OF MAINE

TWENTY-FIRST REPORT

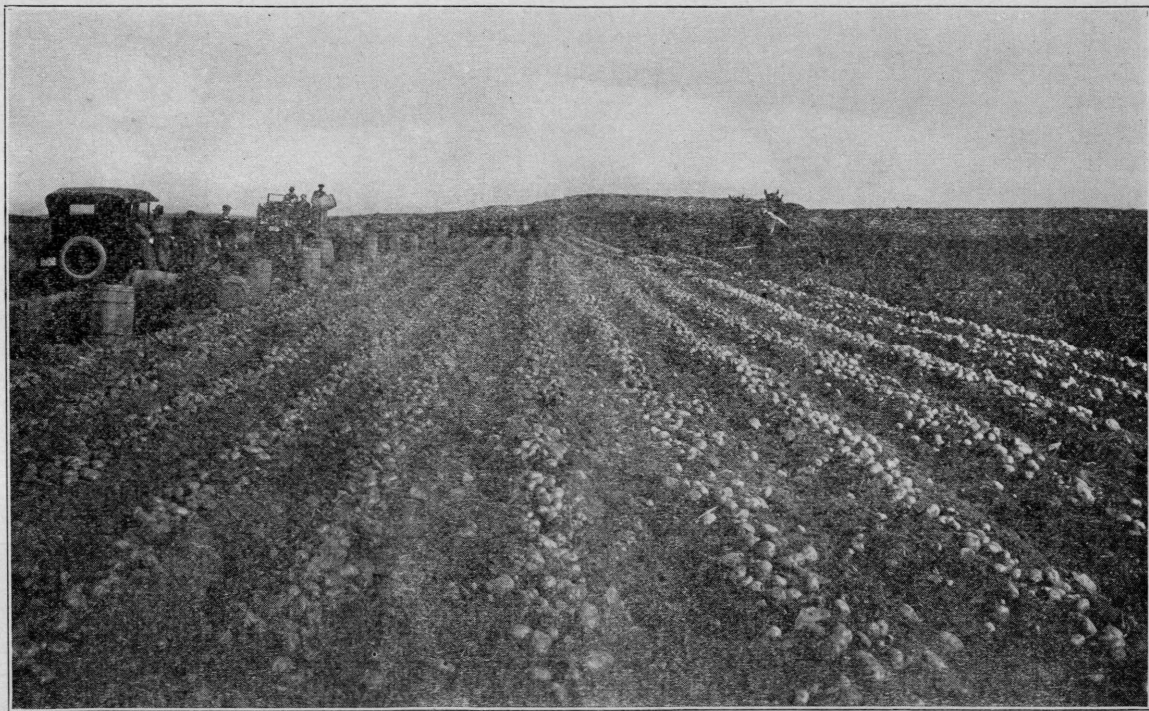
OF THE

Commissioner of Agriculture

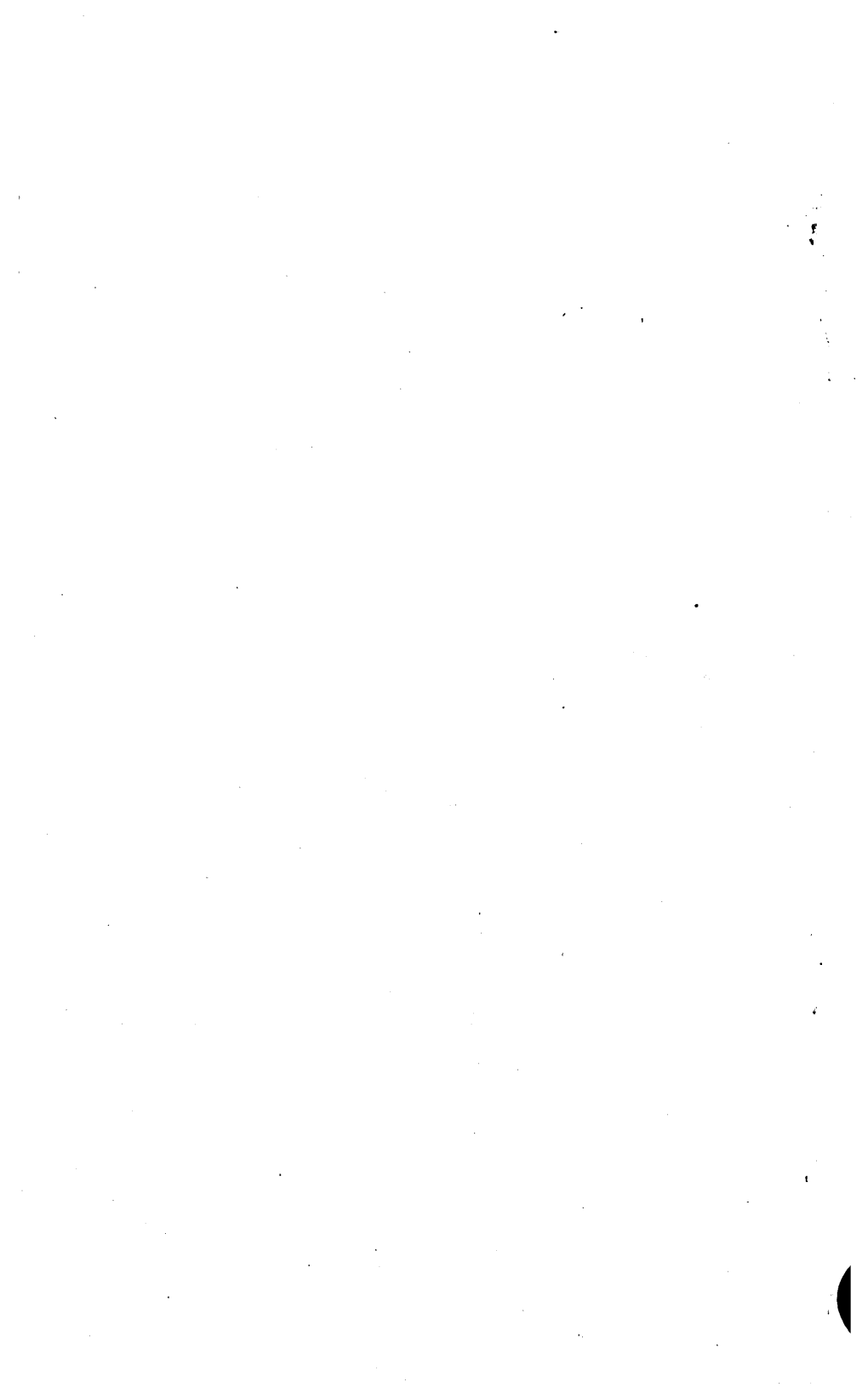
OF THE

STATE OF MAINE

July 1, 1922 to June 30 1924



Two hundred barrels per acre of Maine Certified Seed, W. R. Christie Co. Seed Farm, Presque Isle.



DEPARTMENT OF AGRICULTURE.

*To His Excellency, Percival P. Baxter, Governor of Maine,
and Council:*

In compliance with the provisions of our Statutes, I have the honor of submitting to you the accompanying Report of the Department of Agriculture for the period from July 1, 1922, to June 30, 1924.

The Report covers briefly the activities of the various divisions of the Department.

Respectfully submitted,

F. P. WASHBURN,

Commissioner.

Augusta, Maine, June 30, 1924.

MAINE DEPARTMENT OF AGRICULTURE.

Commissioner, F. P. Washburn, Augusta
Deputy Commissioner, Vacant

STAFF

Chief, Division of Inspection, A. M. G. Soule, Augusta
Chief, Division of Plant Industry, E. L. Newdick, Augusta
Chief, Division of Animal Industry,
H. M. Tucker, Yarmouthville
Chief, Bureau of Markets, C. M. White, Augusta
Dairy Inspector, Forrest A. Barbour, Augusta
Assistant Dairy Inspector, Clayton P. Osgood, Fryeburg
Sheep Specialist, C. H. Crawford, Dexter
Horticulturist, George A. Yeaton, Chelsea
Deputy Sealer of Weights and Measures,
Clarence O. Brown, Brewer
Field Agent, Bureau of Markets, Fred C. Sturtevant, Hebron
Field Agent, Gypsy Moth Work, M. H. McIntire, So. Berwick
Assistant, Bureau of Seed Improvement,
Guy C. Porter, Houlton

CHIEF CLERK

Margaret P. Whalen, Eastport

CLERKS AND STENOGRAPHERS

Blanche E. Yeaton, Augusta
Dorothy M. Lippincott, Augusta
Dorothy E. Rundlett, Augusta
Viola A. Rice, West Gardiner
Ethel Quinn, Hallowell
M. Beatrice Roderick, Augusta
Daisy V. Hunnewell, Wiscasset

REPORT OF THE COMMISSIONER OF AGRICULTURE.

With this Report the officials of the Department of Agriculture present a record of their activities over a period of two years. In accordance with an Act of the Legislature of 1921 and also with the general policy of the State under present conditions of exceedingly high costs in all printing and binding work, no Report was printed for 1922-23. A brief summary of the work of the Department for that year may, however, be found in this volume.

In preparing my Report for 1921-22, I ventured to forecast that the difficult conditions and unsatisfactory results which had overtaken Maine agriculture as a result of post-war deflations might be speedily relieved and that substantial improvement in the position of our farmers was probable. This prediction, although apparently well grounded, has not been fully realized. In common with tillers of the soil in many other States, the Maine farmers still continue to produce without a satisfactory profit on their labor and investments because the value of their products has declined in far greater proportion than the cost of production.

It should not be inferred from this, however, that during the biennium just passed no material progress has been made. In their business methods, in the grading and preparing of farm products for market, in the care they are giving to the selection of good seed and better livestock and in their appreciation of the value of cooperation, our farmers have forged ahead to an extent that promises well for the future. They very generally understand that the real problem is no longer one of making the traditional two blades or two units of any product grow where one grew before but rather that the one blade or the one unit be produced on less land with less labor and at a greater profit than formerly. With our fertile acres and industrious,

intelligent farm population, we have already attained an enviable position among the agricultural States in our per acre population. We should now turn our best thought and effort toward getting a better return for labor and capital invested to the end that we may enjoy shorter hours of toil, greater attractions and conveniences in farm life and a consequent increase of opportunity for social and mental advantages. In the achievement of these desirable results lies our only hope of retaining the interest of our young men and women in farm life.

It should prove cause for satisfaction among all classes of our citizens that the Maine farmer has met the unusual burdens and discouragements of the past five years with so much spirit and courage. He has proved himself to be no pessimist but with brave and earnest purpose he still looks to the future. He realizes that the aftermath of war is always economic disturbance which most persistently and adversely affects agriculture and that these conditions cannot be wholly or immediately turned aside. Every effort that human ingenuity and perseverance can devise has been invoked by our farmers to preserve their industry and the agricultural wealth of the State. They have, I believe, displayed a degree of courage and fortitude that could not be matched by any other class of our business men.

The Department of Agriculture in all its branches has endeavored at all times to foster progressive movements among our farmers and to encourage production along rational lines with especial emphasis upon the subject of improved quality of output which is and must continue to be the objective of our producers. Unfortunately much of our work as provided by Statute is regulatory. Probably three-fourths of the time and funds of the Department must be devoted to police work and it frequently happens that our efforts are misunderstood by the very men we are endeavoring to assist. In the enforcement of apple packing laws, pure food regulations, seed certification rules and dairy requirements all violations must be treated alike. It has been the intent of every member of the Department to make the administration of laws under his jurisdiction educational and helpful rather than arbitrary.

Details of our work will be fully treated in the various reports of heads of bureaus and divisions as submitted to me and presented herewith. With no intent of boastfulness but with at least a degree of satisfaction, I may point out a few special features. The testing of cattle for tuberculosis has increased from fifty thousand seven hundred and twenty-seven in the fiscal year, 1922, to seventy-one thousand six hundred and twenty-four for the corresponding period of 1924 and at the same time the cost to the State for condemned cattle has decreased from seventy-nine thousand nine hundred and ninety-nine dollars to sixty-one thousand three hundred and seventy-seven dollars with a constantly increasing return to the State Treasury from collections for salvage. Seed potato certification entries increased from one thousand two hundred and fifty acres in 1922 to twelve thousand five hundred acres in 1923 and twenty-five thousand acres for 1924. With the establishment of a small fee to be paid by the grower this work has been made self-supporting and we have this year certified some three hundred thousand barrels of seed potatoes which have found a ready market among planters in fifteen Southern and Middle States without cost to the tax payers of Maine. Valuable work has been done in protecting our consumers of food, fertilizers, seeds, drugs, etc., from fraud and also many of our canners of food who have been granted, under certain conditions, certificates of inspection for their products. The entire net cost of this service has been only slightly more than one cent for each inhabitant of the State.

It is our purpose to answer every call for addresses before farmers' gatherings of whatever nature and our men have each year responded to nearly five hundred such invitations. The number of letters received at the Department now averages two hundred daily and in the performance of their duties as provided by law and in response to appeals for advice, assistance and protection, received from citizens all over the State, the men of the Department have travelled in a single year more than one hundred and seventy-five thousand miles.

It is customary to include in the Report of this Depart-

ment a brief statement of the acreage and production of our principal crops. I am accordingly submitting the following figures taken from the Crop Review prepared annually by the United States Department of Agriculture and the Maine Department of Agriculture cooperating.

POTATOES.

Figures of the production of potatoes for the two years present a marked contrast. In 1922, our acreage was one hundred and thirty-five thousand with a total yield of twenty-six million six hundred and forty-four thousand bushels while, in 1923, one hundred and twenty-four thousand acres produced practically thirty-two million bushels. The 1922 crop was not satisfactory from any point of view as the yield was small and prices low. In conjunction with similar unprofitable results in 1920 and 1921, it left many of our potato farmers in serious financial straits. Banks in the potato producing areas were taxed to their uttermost and many farmers were compelled to invoke credit far beyond their custom. Exhibiting a degree of courage and hopefulness almost beyond that to be expected in any line of business the potato growers rallied and planted almost a normal acreage in 1923. This season was favorable, yield excellent and market fairly steady. Considering the percentage of the crop suitable for sale it was probably the best ever harvested in the State. Farmers were able not only to pay cost of production but a substantial discharge of previous indebtedness was effected. More orderly marketing of the crop was promoted by the organization known as the Maine Potato Growers Exchange and both the associated and independent shippers gave especial care to the quality of the product sent out.

APPLES

Comparison of apple crop figures for the two years also disclosed many differences both as to yields and values. The commercial apple crop of 1922 was estimated at two hundred and thirty-two thousand barrels which were mostly sold at a fair price. In 1923, the crop increased to four hundred

and twenty-five thousand barrels but owing to the inferior color and poor keeping qualities only a part of the crop found a satisfactory market and many were entirely lost so far as returning a profit to growers was concerned. The lesson of this unsatisfactory season is that greater care must be taken of our orchards and greater attention paid to pruning, fertilizing, spraying and grading.

CORN.

The acreage of sweet corn for canning was slightly over eleven thousand in both 1922 and 1923, considerably below normal with a production of thirty-seven thousand five hundred and eighty-two and thirty-three thousand two hundred and seventy tons respectively. Relations between growers and canners, somewhat strained for several years, have become more cordial with the establishment of a higher scale of prices and the industry seems to be in a promising condition. Reports for 1924 indicate a return to a normal acreage. Approximately twelve thousand acres of silage corn were planted each year.

OATS.

One hundred and twenty thousand acres of oats were sown in 1922 and one hundred and twenty-five thousand acres in 1923. Production reached the very considerable total of 4,560,000 bushels in the former year and 4,625,000 for the latter. Production of wheat has fallen off considerably since the war time period and only six thousand acres are reported for 1923 with, however, the very satisfactory average yield of twenty-six bushels per acre. About three thousand acres of barley are recorded for each year and nine thousand acres of buckwheat.

HAY.

Two record breaking crops of hay should be mentioned in this Report, the figures for 1922 being one million five hundred and forty-one thousand tons and those for 1923,

one million five hundred and ninety-four thousand tons. This represents an average yield of more than one and one-quarter tons per acre, or far above normal. Much of the 1923 crop did not find a satisfactory market and there is a considerable hold over.

BLUEBERRIES.

One hundred and eighty-four thousand bushels of blueberries were grown and canned in 1922, the crop for 1923 being slightly less. Particular attention has been paid to the quality of this product and many of the canners are keenly aware of the value of clean berries, carefully packed. This is a product of which Maine has a monopoly and it is evident that a concerted effort is being put forth to maintain it.

PEAS.

A new Maine industry has appeared within the past two years, the canning of peas. Four factories were operated in 1923 with satisfactory results especially as regards quality and demand for the product. It is reported that more than one thousand acres of peas have been planted this year for canning purposes.

LIVE STOCK.

The live stock industry, or more particularly that branch of it known as dairying, faces today a serious situation. For several years production of fluid milk, offered for sale in the great consuming centers of New England, has been on the increase. A constantly increasing number of producers both as individuals and in their associations are forsaking the production of cream, butter and cheese and seeking an outlet for their product in the form of raw milk. The balance of production has been broken down. Distributors in Massachusetts, Rhode Island, and Connecticut can secure a supply at their own terms and at the same time a very large percentage of the manufactured dairy products

required in these same consuming centers must be imported from far away States. A movement to organize our producers into a New England-wide Association under which those within a zone near to consuming points should produce milk and those in the more distant territory provide themselves with facilities for manufacturing has already been launched. Its success is, however, problematical. The dairying industry of New England is so widely scattered and so many different interests are represented that it will be exceedingly difficult to bring them all together in a true cooperative spirit. It may well be said, however, that in the absence of some comprehensive plan of production and distribution and with all producers continuing to seek the fluid market a serious reduction in the number of cows will be the inevitable result. Figures for 1924 show a reduction already of about six thousand cattle in Maine. The number of horses, sheep and swine remains about as heretofore.

FARMERS' MEETINGS.

As previously pointed out the Department has taken part in many meetings and gatherings of farmers all over the State. Special mention should perhaps be made of the Fruit Show held each winter at Auburn, the Seed Show and Dairymen's Conference at Bangor and Portland and the Pomological Meeting at Highmoor in August, 1923, which was probably the largest farmers' gathering ever held in Maine. Through the medium of the Granges, Farm Bureaus and Farmers' Cooperative Associations it is believed that more people may be reached by our speakers and at less expense than under the Farmers' Institute plan.

BULLETINS.

Owing to the great expense involved in all printing projects, practically all the regular quarterly bulletins of the Department have been omitted. It is to be regretted that the educational and reference work of the Department has been so curtailed. Material for several bulletins, touching subjects of importance to Maine agriculture, is already

in preparation and it is to be hoped that printing rates within the range of our appropriation may soon be secured.

FAIRS.

Fifty-four Fairs were held in the State in 1922 and fifty-three in 1923, and this number will be slightly increased in 1924. Complete tabulations of the returns from our Fairs, made for the first time in 1923, disclose the following interesting facts. In this year the total amount paid in premiums on agricultural products by all Societies was \$69,799.26, classified, as follows:

On horses and colts	\$3,959.00
On purebred bulls and bull calves	4,902.40
On grade cows and heifers	1,096.05
On purebred cows and heifers	11,767.04
On oxen and steers	1,096.65
On beef cattle.....	1,196.00
On herds	4,650.20
On sheep	5,000.75
On poultry	10,517.56
On swine	2,218.90
On town teams	996.40
On grains and root crops	3,157.20
On fruits and flowers	3,768.25
On dairy products	724.51
On canned goods	753.25
On needle and fancy work	3658.60
On hauling contests	989.00
On boys' and girls' clubwork	1,207.67
On Grange Exhibits	1,422.00
On miscellaneous, art exhibits, special farm displays, etc.	6,717.83

The total attendance at all Fairs was found to be three hundred and eighty thousand and twenty-one and the value of all property belonging to the Associations, five hundred and sixteen thousand four hundred and eighty-four dollars

and their liabilities one hundred and thirty-seven thousand six hundred and eighty-seven dollars.

Contemplation of these figures reveals some unsatisfactory conditions. The bounty of the State in the form of a stipend to Agricultural Societies is offered as an encouragement to agriculture. Too little attention is paid by these Societies to agricultural features and too much to amusements and attractions that do not promote agriculture. The total amount paid by more than fifty Maine Societies in premiums on fruits and vegetables in 1923 was less than that paid by one Fair in the State of Massachusetts and the total for dairy products, only seven hundred and twenty-four dollars.

Unquestionably we have too many small, weak Fairs and the time may be near at hand when we shall seriously consider limiting the number that receive State aid to one or two for each County, such Fairs to be more closely under State supervision and to receive a more substantial stipend. In general the three State Fairs and the larger local Societies have done excellent work and accomplished much for the cause of agriculture.

EASTERN STATES EXPOSITION.

A considerable portion of the Agricultural Department force has been annually employed during the first part of the month of September in preparing and displaying the State of Maine exhibit at Springfield under the direction of our efficient Bureau of Markets. It has become our policy to feature with each year's display some one definite branch of Maine's agricultural resources. It is believed that in this manner a more striking lesson is impressed upon the minds of visitors at the Exposition. In 1922, apples were the theme of our display. In 1923, potatoes were featured and for 1924 canned goods have been selected. The annual cost of the exhibit is approximately three thousand five hundred dollars which cost we have with careful management been able to provide for out of the unexpended balances of our regular appropriations.

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FINANCES.

The Legislature of 1923 provided wisely and generously for the needs of the Department of Agriculture and with one inconsiderable exception, I have been able to keep within all appropriations. At the same time approximately forty-five thousand dollars in the form of license fees, fines, registrations and salvage receipts have been collected and turned into the State Treasury. It is not now expected that it will be necessary to ask the Budget Committee of the incoming Legislature for any material increases. One item among our appropriations does, however, demand consideration. The salaries paid to division and bureau heads are too low; far below what the men so employed could command in other situations. With the increasing demand for agricultural experts on the part of agricultural supply houses, farmers' organizations and cooperatives, we cannot long retain the services of efficient men at salaries which barely provide the necessities of life. Most of our men must forsake their farms in order to render efficient service to the State and submit to the high living expense of town life. In my administration of this office, I have been constantly and seriously handicapped by resignations of valuable men who have received their training at the expense of the State and then left its service because we have not provided any possible encouragement in the line of increased compensation. I believe that the usefulness of the Department and the value of its service to our people will be seriously impaired in the future unless some reasonable provision is made for salaries adequate to the needs of the Department employees and commensurate with the service they render.

SUGGESTED LEGISLATION.

In its enactment of the Cooperative Marketing Act, the Seed Potato Certification Law, amendments to the Farm Loan Act and several other features, the Legislature of 1923 rendered signal service to the cause of agriculture in Maine. While it is a recognized fact that prosperity for our farms

can never be achieved as a direct result of Legislation yet these Acts have undoubtedly done much to encourage our farmers. Some suggested subjects for farm legislation in 1925 are here presented.

Every possible protection should be given to the brands and tags now used to distinguish our certified seed potatoes. Counterfeits and near-duplications of these tags are now in frequent use and the reputation of our product is impaired. If legally possible the use of the word "certified" should be prohibited on any except seed that has received the approval of State inspection.

Again some provision should be made for the carrying on of Tuberculosis Eradication work in areas or districts within which it may be possible under certain conditions to compel the testing of all cattle.

Fruit growers are displaying increasing interest in the enactment of such legislation as will at least provide a starting point in the campaign to compel the cleaning up of abandoned, but disease bearing and insect ridden fruit trees. Such legislation should not at first, perhaps, be too drastic in its nature but the time has come when the indifferent, neglectful land owner no longer has any moral right to impair the success and render futile the efforts of his neighbor who carefully, laboriously and at great expense, prunes and cares for his trees.

COOPERATION WITH OTHER AGENCIES.

This Report would indeed be incomplete without some mention of the cordial relations now existing among all orders, institutions and agencies engaged in agricultural work in Maine. One of the most gratifying features of my work has been found in the pleasant, profitable associations formed at every point of contact. We shall go far to find in any State such a happy relationship with Grange, Farm Bureau, Cooperative Organizations, College of Agriculture, Experiment Station and Department of Agriculture. Chambers of Commerce and Boards of Trade are also now displaying sincere interest in the affairs of the farmers

since all realize that the prosperity of their members must in the end depend upon the success of our greatest industry, agriculture.

This Department has gladly joined in frequent conferences with all other agricultural agencies in the State for the purpose of working out plans of action, to avoid duplication of effort and to make sure that no projects essential to the welfare of our rural people may be neglected.

CONCLUSION.

In conclusion, I desire to testify to the loyalty, helpfulness and efficient cooperation rendered to me by all employees in the several divisions and bureaus of the Department. It has been always a privilege and a pleasure to be associated with men and women who have so untiringly and unselfishly given of their best service to make better and happier the lot of the farmers of Maine and to protect the health and safe living of all our people.

Respectfully submitted,

F. P. WASHBURN,

Commissioner.

REPORT OF THE CHIEF OF THE DIVISION OF
INSPECTION.

To the Honorable F. P. Washburn, Commissioner of Agriculture:

I respectfully submit to you my report of the work done by the Division of Inspection from July, 1922, to July, 1924.

As outlined by the statute, the work of the Division of Inspection has consisted in the enforcement of the law regulating the sale of agricultural seeds, commercial feeding stuffs, commercial fertilizers, drugs, foods, fungicides and insecticides, including the duties involved by the annual registration required for commercial feeding-stuffs, commercial fertilizers, fungicides and insecticides; also, the enforcement of the weights and measures law and the enforcement of the law regulating the packing and grading of apples.

A great deal of cooperative work has been done by inspectors of the Division and the health officers in various cities and towns, thus greatly broadening the scope of the inspection work.

The usual inspection of seeds began early in the spring and the collection of samples was continued until past planting time.

The inspection of feeding-stuffs and the collection of samples has been conducted as usual.

The usual number of fertilizer samples were obtained during the spring months.

Almost constant inspection has been given Portland, Bangor, Lewiston and Auburn, in food and drug matters, where inspectors of the Department have cooperated with the

health officers. At least 685,000 of the total population of 768,014 have been afforded protection by inspection of their food supply.

SEED INSPECTION.

The seed inspection from July, 1922, to July, 1924, was performed for the most part by our regular inspectors, who covered practically the whole State and obtained many samples. The findings of the inspectors and the results of analyses of the seeds collected were, in some instances, not very satisfactory. The results of the analyses of the samples collected together with samples from dealers may be found in OFFICIAL INSPECTIONS NO. 106.

FEEDING-STUFFS INSPECTION.

The feeding-stuffs inspection for 1923-24 has been marked by the registration of a great number of brands. In general, the samples collected have been found, upon analysis, to accord with the guarantees in the certificates and on the packages. It has been necessary to arrange numerous hearings on account of non-registration. If difficulties have arisen with products of interstate shipment and the cases warranted action, such cases have been referred to the Federal Department. The following table briefly outlines the scope of our work with relation to feeding-stuffs, and is understood to represent the calendar year:

	1923	1924
Number of brands registered.....	682	629
Number of samples drawn from September, 1922, to May, 1923.....		195
Number of samples drawn from October, 1923, to May, 1924.....		375
Number of hearings arranged.....	35	25

The results of analyses of the samples taken may be found in OFFICIAL INSPECTIONS NO. 108.

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. 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.

Most of the samples obtained were found to be entirely in accordance with their guarantees.

	1923	1924
Number of brands registered	276	234
Number of samples collected	36	33
Number of hearings arranged.....	13	0

The figures in the above table represent the registrations for the calendar year.

The results of analyses of the samples collected may be found in OFFICIAL INSPECTIONS NO. 106.

FERTILIZER INSPECTION.

In 1923 and again in the spring of 1924 inspectors were able to collect more samples of registered brands of fertilizers than at any other time in the history of the inspection service.

Particular attention was paid to obtaining official samples both from storehouses and agents and also from the farmers having fertilizer on hand.

In the growing season tours of inspection were made to the potato section of the State with the idea of checking up on any complaints as to loss of crop from inferior fertilizer.

In the season of 1923 only one definite complaint was received that merited investigation.

The brands found by the inspectors were for the most part properly registered. A few were found offered for sale for which registration had not been made and in these cases the agents were cited to hearings.

The following is a table outlining the work accomplished with relation to fertilizer. The various brands of fertilizers are registered for the calendar year.

	1923	1924
Brands registered	242	298
Samples collected.....	293*	376*
Hearings arranged	10	7

*Many brands sampled in duplicate.

The results of analyses of the samples collected may be found in OFFICIAL INSPECTIONS NO. 109.

DRUG INSPECTION.

The drug inspection work has been performed in a particularly efficient manner, the inspection having been accomplished by a registered pharmacist, who, along with his other work, has served in the capacity of sanitary inspector of ice-cream saloons and soda fountain establishments.

The drug samples collected have consisted of the more common preparations manufactured usually by druggists themselves, such as peppermint, camphor, checkerberry, iodine and nitre. It is highly important that drugs, whether recognized by the United States Pharmacopœia or not, should, when administered, produce the desired therapeutic effect.

The following list gives a general idea of the drug work accomplished by this Division:

	1923	1924
Number of samples collected	47	29
Number of hearings arranged	0	4

The results of the analyses of the samples collected may be found in OFFICIAL INSPECTIONS NO. 107.

FOOD INSPECTION.

In the work of food inspection, the collection of samples has represented only in a small way the amount of work accomplished. As has been our custom, we have endeavored by different methods to effect the best results—that is by education, inspection and prosecution.

GROCERY STORES AND MARKETS.—The deputies of this Department have made numerous inspections, reporting as to the general condition of the place, the cleanliness of the walls, floors, shelves and counters, the condition of meat rooms and refrigerators, and the general methods observed as to the proper labeling of lard, molasses, sausage and vinegar when sold in substitution for the real article.

RESTAURANTS.—The inspection of hotels, particularly the dining rooms, lunch rooms, restaurants and lunch carts has been carried on as fully as the funds available and the force of inspectors employed permitted. Particular attention has been paid to the condition of dishes and utensils used and the refrigerating facilities noted.

BAKERIES.—We have attempted to investigate as fully as possible the methods used in dispensing bread, not only in bake shops but on delivery teams and in stores. Bread, as it comes from the oven, is in a sterilized condition. This is the last sterilizing process that bread receives before being consumed, as a very small amount of bread is subjected to any heating or toasting operation. It is obvious, therefore, that bread in order to be suitable for food should be at all times carefully protected. Inspectors have instructed drivers of bakery teams to be particularly cleanly in their habits in the matter of handling bread. It is gratifying to report that there has been a marked improvement in the general condition of the bake shops throughout the State of Maine during 1923 and 1924.

BOTTLING ESTABLISHMENTS.—The usual inspection of bottling shops, where soft drinks are manufactured, has been carried on. The use of saccharine in food, especially

in carbonated beverages, which really contain such a small amount of food value, is a vicious practice. Not only has saccharine been adjudged by eminent authorities as a menace to health, and on this ground could be very well condemned, but when used as a substitute for sugar, constitutes the perpetration of a fraud and imposition upon the consumer.

It is very gratifying to report that the Maine bottlers at their last convention appointed a committee and gave it instructions to come to the next Maine Legislature, asking for some form of license for bottling establishments. This is exactly what has been urged and recommended in previous Reports of this Division.

FOOD FACTORIES.—We have attempted to investigate as far as possible, and within our means, the conditions of the food supply which would in any way affect the public health, with particular reference to bakeries, slaughter houses, bottling works and canning factories, endeavoring always to assist and advise with the end in view of producing a cleaner and better product. Special endeavor was made to make as complete an inspection as possible of our three leading industries with reference to packing food, namely: corn, blueberries and sardine factories. With the idea in mind of improving the quality of canned blueberries especial attention has been given to the blueberry canning industry.

In 1922 at the beginning of the blueberry canning season, an inspector was instructed to pay particular attention to blueberry factories. This official took up his residence in the district, and made frequent inspections of the factories, closely watching the raw material which was used. In general courteous treatment was accorded him and very definite and complete cooperation given by the blueberry packers.

Cooperating with the Department, trained entomologists from the Experiment Station made studies of the conditions in the fields. Representatives of the Bureau of Chemistry, at Washington, also cooperated with our State inspector, and the county agent of the State's Extension Service devoted considerable time to the subject of blueberry packing.

Even the special attention given this particular industry

did not result in a satisfactory improvement of the quality of the products packed, although it is only fair to report that this work made a good beginning for subsequent endeavors.

Early in February, cooperating with the county agent, conferences with the blueberry packers were held, and at this time evidence was shown that some of the packers at least were ready to contract with the Maine Department of Agriculture to pack their goods completely and entirely under the supervision and inspection of the Department.

Sections 23 and 24 of chapter 36 of the Revised Statutes of 1916 have been a part of the Maine Pure Food Law since 1911, constituting an optional arrangement that can be entered into by a packer of food and the Commissioner of Agriculture.

Ever since the sale and manufacture of food has been regulated by statute and laws enforced requiring that food should be sold of known quality and purity, there has been a tendency on the part of the honest manufacturer to secure, if possible, official sanction and approval of a product that was known to have been manufactured under proper sanitary conditions and free from adulterants. This tendency was finally developed in Maine and resulted in the passage of the law above mentioned legalizing the certification by State authorities of products packed under State supervision. That is, if a packer of food so desires, he can make application to the Commissioner of Agriculture and that official by adequate inspection shall supervise the packing of the food in the factory of the person who has applied for inspection. If he is satisfied that the food is packed in conformity with the requirements of the Maine Food Law, the packer will be authorized to mark the containers of the food he has packed with a statement certifying that the food in such containers has been "Packed, inspected and passed under the Maine Pure Food and Drug Law". All expense of this inspection is borne by the packer, although the inspector is understood to be entirely under the supervision of the Department of Agriculture.

The season of 1923 marked an epoch in food factory control in the state of Maine as three canning factories packed

blueberries under State supervision in accordance with arrangements authorized by statute as above outlined. In general the venture was most successful and so regarded by the participating canners. It was also pleasing to know that this arrangement had a remarkably salutary effect on other factories in their vicinity that were canning goods similar to theirs in character, but without full time inspection. It is hoped that this form of inspection can be developed by State aid, fostered by Federal control, encouraged by cooperative relations between States, and gradually embraced by the better class of packers. Under such conditions success for the venture is hoped for.

BUREAU OF WEIGHTS AND MEASURES.

As the activities and accomplishments of this Bureau will be reported in detail by the Deputy Sealer of Weights and Measures, it hardly seems fitting that any statement regarding the work of this Bureau should be made a part of this report.

BUREAU OF APPLE INSPECTION.

The enforcement of the law providing for the grading, packing and branding of apples has been carried on as extensively as the funds available for the purpose would permit.

Two inspectors have been employed during the apple shipping season, and taking into consideration that this apple packing law has been in effect for nine years, their findings have not been entirely satisfactory. Taking advantage of the opportunity afforded, numerous inspections were made on apples in cold storage, and the breadth of the inspection greatly increased.

The legislature of 1923 made a slight alteration in the apple packing law, providing for marking on packages the minimum size of apples in various grades, and as a result numerous technical violations have been reported by the inspectors in the season of 1923, apparently entirely due to ignorance of the law.

In the period covered by this report thirty-two violators of the law have been cited to hearings and paid fines.

Early last fall a produce dealer in Portland made a complaint as to the quality of a lot of apples purchased from a Massachusetts concern. An investigation by deputies of this Division revealed that the complaint was justified, as the apples were found to be misbranded under the Massachusetts law. Federal pure food officials at the Boston Station of the United States Bureau of Chemistry were notified, and finally after several delays the case was successfully prosecuted by them. The results are gratifying as the precedent established by this case can well be regarded as a valuable one for enforcement officials.

COOPERATIVE WORK.

Throughout the years we have been in the closest touch with the Federal Bureau of Chemistry, enjoying at all times the most complete cooperation, 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.

SUMMARY AND RECOMMENDATIONS.

To briefly summarize the work of the Division of Inspection it has been our duty, as outlined by the statute, to safeguard the food and drug supply, to investigate the quality and purity of feeds, seeds, fertilizers and spraying materials, and to insure just weights and measures of these commodities used by the people of the state of Maine.

There are many conditions that need remedying. The country slaughter house and the lack of inspection therein is to be greatly deplored. Before the ideal can be realized, it is our belief that more legislation is necessary.

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 Department of Agriculture, 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.

In conclusion please accept my thanks for your kind advice, wise counsel, and hearty cooperation 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 cooperation 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, Division of Inspection.

REPORT OF THE DEPUTY STATE SEALER OF
WEIGHTS AND MEASURES.

To A. M. G. Soule, Chief of the Division of Inspection:

As State Deputy Sealer of Weights and Measures, I respectfully submit to you a report of the work done by this Bureau covering the period from January, 1922, to July, 1924.

During this time a careful supervision has been made of the work done by the two hundred and sixty-five local sealers in this State. Aid has been given personally and by letter to at least eighty-five per cent of this number. Several new appointments have been made to fill vacancies caused by resignations, and these new appointees, in nearly every case, were not familiar with the duties of their office or the requirements of the statute.

It is almost impossible to obtain a report from each town every year for several reasons. For instance, many officials are lax in filling vacancies when they occur, and in the small towns, under the fee system, the income derived is not sufficient to make the position desirable. As soon as the public realizes the importance of this work, more funds will be appropriated to pay the local sealers, and better service will result.

Nearly everything that is bought and sold must be weighed or measured, and it is very important to both the buyer and seller to know whether the weighing and measuring devices used are accurate. Therefore, it is essential that all weights and measures be tested from time to time; and the statute requires that this be done once a year. The statute further requires that every five years the cities and towns shall have their standards proved by the State standards.

During the year 1923 one hundred and five sets of standards were received at this office and were tested and sealed.

During the present year twenty-seven cities and towns have submitted their weights and measures to this office for approval.

Several weights and measures were found that did not pass inspection, and the municipal officers were notified to purchase new equipment to replace those weights and measures that were condemned.

Many cities and towns have added to their equipment the new automatic gasoline measures to meet present demands.

I find, as a general thing, upon checking up the work done by the local sealers that they have performed their duties satisfactorily and conscientiously. Included in this report is a summary of the work done by the local sealers throughout the State. From this you will see that the percentage of weighing and measuring devices condemned was very small. This shows that the dealers in this State realize the necessity of maintaining reliable equipment in their business thereby assuring themselves and their patrons that honest weights and measures are of paramount importance.

At various times, complaints were received regarding the accuracy of gasoline pumps, but upon inspection, in nearly every case, I found that they were in good order and delivering correct measure. The operator of a gasoline pump should always prime a pump before a sale is made if the pump has been idle for several hours. A majority of the gasoline pumps used in this State are owned by the oil companies, and these companies maintain a corps of repair men to adjust and install such measures. I have always found the companies ready and willing to immediately adjust faulty measures or install new measures.

Complaints have also been received that a few dealers in coal and coke were not complying with the statute requiring that with each delivery a slip be given, showing the gross, net and tare weights, such slip being signed by a sworn weigher. As soon as this violation was brought to the attention of the dealers, they were very willing to comply with the law.

I have attended two conventions of the local sealers during the past two years, one in Augusta and one in Portland. The attendance at both meetings was small. There were exhibited at these meetings various types of scales by several large scale manufacturers, their representatives explaining the methods of adjustment to the local sealers.

I recommend at this time that the sealers in the cities of Maine be given an adequate salary for their services and that the towns put their sealers on a per diem basis, as this very important public service will not be improved in the future unless the sealers receive satisfactory compensation.

I wish to thank the members of this Department for their kindly advice and cooperation.

Respectfully submitted,

CLARENCE O. BROWN,

State Deputy Sealer.

STATE REPORT OF WEIGHTS AND MEASURES FOR THE YEAR 1922

Counties.	NUMBER TESTED							NUMBER CONDEMNED						
	Scales.	Weights.	Dry Measures.	Liquid Measures.	Yard Sticks.	Automatic Pumps.	Milk Jars.	Scales.	Weights.	Dry Measures.	Liquid Measures.	Yard Sticks.	Automatic Pumps.	Milk Jars.
Androscoggin	1,472	1,445	76	360	24	235	35	103	10	-	18	16	-	-
Aroostook	1,339	1,419	72	300	97	348	230	31	17	1	18	1	12	4
Cumberland	3,415	4,396	480	2,316	230	473	1,112	179	13	4	23	2	22	4
Franklin	391	827	19	199	22	120	316	7	1	-	-	-	-	-
Hancock	673	1,110	106	522	43	158	414	18	24	1	14	1	9	-
Kennebec	1,046	1,055	131	479	24	278	18	11	29	2	6	-	12	-
Knox	789	1,354	77	547	76	158	513	30	124	4	9	2	2	2
Lincoln	278	491	24	70	22	42	-	2	-	-	-	-	-	-
Oxford	655	252	48	161	56	180	603	4	-	-	-	-	1	-
Penobscot	1,374	2,414	78	740	176	441	27	23	-	1	11	10	6	2
Piscataquis	304	687	20	114	31	68	20	2	6	-	2	-	-	-
Sagadahoc	499	398	79	204	42	128	605	9	-	-	-	-	-	-
Somerset	672	684	121	330	60	174	-	21	37	5	6	7	18	-
Waldo	539	622	48	323	27	209	243	4	-	-	-	-	-	-
Washington	786	1,108	193	546	90	218	309	17	-	-	-	-	4	-
York	1,188	1,178	139	485	117	325	5,807	14	12	2	17	2	5	26
Totals	15,420	19,440	1,712	7,696	1,137	3,555	10,252	475	273	20	124	42	92	32

STATE REPORT OF WEIGHTS AND MEASURES FOR THE YEAR 1923

Counties.	NUMBER TESTED							NUMBER CONDEMNED						
	Scales.	Weights.	Dry Measures.	Liquid Measures.	Yard Sticks.	Automatic Pumps.	Milk Jars.	Scales.	Weights.	Dry Measures.	Liquid Measures.	Yard Sticks.	Automatic Pumps.	Milk Jars.
Androscoggin.....	1,762	1,503	51	385	30	332	43	118	28	-	2	-	-	8
Aroostook.....	918	1,544	7	278	90	265	-	33	17	-	9	5	-	6
Cumberland.....	3,560	3,415	346	1,855	309	636	1,117	113	20	1	17	9	-	13
Franklin.....	341	524	26	191	47	116	204	6	-	-	-	3	-	4
Hancock.....	725	1,006	103	552	86	202	300	17	4	-	4	-	-	3
Kennebec.....	708	692	18	193	15	146	-	8	10	-	4	-	-	-
Knox.....	892	803	104	1,057	117	232	422	25	83	4	2	1	-	17
Lincoln.....	328	597	35	200	22	93	144	2	-	-	-	-	-	1
Oxford.....	839	537	29	234	81	265	549	8	-	-	3	-	-	1
Penobscot.....	1,526	2,223	102	823	177	378	20	16	18	2	16	1	-	11
Piscataquis.....	141	226	10	43	8	44	-	1	-	-	-	-	-	-
Sagadahoc.....	439	711	35	103	46	53	36	10	-	-	-	5	-	1
Somerset.....	747	803	106	330	97	229	-	15	28	-	13	7	-	14
Waldo.....	494	626	22	309	40	185	122	1	2	-	-	-	-	1
Washington.....	768	735	220	437	92	227	509	12	-	-	-	-	-	1
York.....	1,244	1,041	137	598	140	424	5,075	21	1	5	18	-	-	6
Totals.....	15,432	16,991	1,351	7,588	1,397	3,827	8,541	406	211	12	88	31	72	13

COMMISSIONER OF AGRICULTURE

REPORT OF THE CHIEF OF THE DIVISION OF PLANT INDUSTRY.

To Honorable F. P. Washburn, Commissioner of Agriculture:

I respectfully submit the following as a report of the Division of Plant Industry for the two years ending June 30, 1924. This report will be made in three sections, the State Horticulturist, the Gypsy Moth Field Agent, and the report of the Bureau of Seed Improvement, each being made separately.

A statement of the work of the Division as a whole, preceding the detailed reports may be in order. It has been found very satisfactory to work under the new change in the fiscal year because much of our important work starts during the month of July, and it has been easier to plan the financial side of the work, having sufficient funds on hand at this particular time. The work of the different branches has also been made more efficient by the transfer of inspectors from one section to another when the work seemed to be rushing in a particular department. This is especially true in the seed work where a large number of men are required for a few weeks.

As chief of the Division, I have tried, during the period covered by this report to emphasize a few things which seemed to be of the most importance. It seemed better to do this and devote more time to them, than to attempt too much and spread our forces out too thin.

Particular stress has been laid upon cooperative work with the United States Department of Agriculture through the field laboratory in Melrose Highlands, Mass. Here, all the parasite work is done for New England in handling the Gypsy and Brown-tail moth situation. We have met every demand made upon us by the laboratory in the matter of

making plantings and also larvæ and pupæ recoveries. This field seems to offer the best opportunity for handling the complex Gypsy moth situation and the division will continue to keep very closely in touch with Mr. C. W. Collins, the entomologist at the laboratory.

A great deal of time and energy has been put into our seed certification work, lending special effort towards making this self-supporting and, for the first time in the history of the work, this has been accomplished. The growers are now bearing the entire expense which follows out our recommendation of a few years ago, and from conversation with the different growers, it seems that they are willing that the cost should fall on them.

BUREAU OF SEED IMPROVEMENT.

The work of this Bureau is handled personally by the Chief of the Division, and to make a comprehensive report of the status of this work, a great many figures will be used. It is believed that even though this may make tiresome reading, the results can be shown better than by any other method.

There has been a consistent increase every year in the number of acres entered for certification. This increase amounts to practically one hundred per cent over that of the previous year. From 1921 to 1922, there was a very large increase in the number of acres, amounting to nearly three hundred per cent but the increase in the acres passing inspection was only about one hundred per cent. From 1922 to 1923, the increase was slightly more than three hundred per cent, reaching a point where it has become a real problem to get a sufficient number of men to do the work. In 1922, the acres that were passed and disqualified are as follows:

	<i>Passed.</i>	<i>Disqualified.</i>
Cobblers	481	541
Mountains	635	855
Spaulding Rose	68	205
Bliss	3	5
Norcross	—	5
Wellington	3	—

The large increase each succeeding year has been due, no doubt, to the fact that the seed buyers have at last realized that there is no such thing as cheap seed and they are now offering a premium. At the end of the 1922 shipping season, we had moved practically one hundred cars of certified seed. This was a substantial increase from our earlier years, but it still left much to be desired.

In the beginning of the 1923 season, the total entries were 13,056 acres which were divided as follows:

	<i>Passed.</i>	<i>Disqualified.</i>	<i>Withdrawn.</i>
Cobblers	1987	1534	
Mountains	3644	3423	
Spaulding Rose	585	931	
All others	12	52	888
	<hr/>	<hr/>	<hr/>
	6228	5940	888

At the end of the 1923 shipping season, it was shown that there had been sold and moved under the blue tag 277,882 barrels having wide distribution which is shown by shipment to the following territories: New Hampshire, Vermont, Rhode Island, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, District of Columbia, New Brunswick and France. This season's shipments of over 1,000 cars represent a large increase over the previous year. It would almost seem that a comparison of the figures for two years tells the story about as well as it can be told. An analysis of the situation, however, may properly be made and it may save some mistakes in the future.

If a benefit had been derived simply from those cars which were sold at some advance in price, we would not have attained the objective which the Department started for several years ago. It is felt, however, that the largest gain has been made in an increased yield in our entire crop. At the same time, the quality of our product has been built up. A conservative estimate would place the average yield, field run, of the certified fields at one hundred and twenty-five

barrels per acre. We have a number of instances where it was much higher. Mr. John McElwain of Caribou had an average of more than one hundred and sixty-five barrels per acre for his entire fifty-five acres. We have a few instances of growers getting more than two hundred barrels per acre, all of which shows the possibilities which exist. It must be stated in all fairness that the season that just passed was an exceptionally good one. If the standard of the entire potato crop of the State can be raised, the object for which certified work was first established will have been accomplished.

Up to June 15, 1924, there had been entered for inspection 23,702 acres which shows that approximately twenty per cent of the total potato acreage of the State is entered for inspection. This brings the Department to a position where it must bring all its resources to bear and get all the assistance it can from the other agricultural organizations within the State, in order that the work may be accomplished. It will require a great many inspectors to handle the situation. It is not a good plan for any organization to discuss the problems incidental to its work because every one has his troubles, but in order that a clear understanding may be had, the Bureau feels it only fair to say that it is a difficult problem to get a sufficient number of men who have had experience and who are able to identify plant diseases to the extent that they might be called good inspectors.

The season has a great deal to do with the work. Nineteen hundred and twenty-two was a very favorable year for the detection of our plant diseases. We had rain in a sufficient quantity so that the growing conditions were especially good and it seemed to bring out all that was mean in a plant. Nineteen hundred and twenty-three was an average season and the mild forms of the different diseases were located by close observation, while the more advanced stages of the diseases showed readily.

CHANGES IN METHOD.

In the early years of seed certification work, the inspectors attended to the roguing at the time the inspection was

made. With the largely increased acreage, it has been found impossible to keep up this system. It is now necessary for each grower to do his own roguing, acting under the advice and instruction of the inspector. The season for making the actual inspection is short and it was found practically impossible to hire a sufficient number of men so that the Department could do the roguing. Putting the burden on the grower may seem like a hardship but it is apparently the only way to handle a problem of this size. We have noticed, that with the growers doing the roguing, they have become much interested in the different diseases and it is a common occurrence now for a grower to tell us or to tell an inspector as soon as he arrives at the farm that the potatoes will not pass inspection. Where this occurs, it generally makes the grower more determined than ever and he begins to look about for some better seed for next year.

July 1, 1923, there went into effect a new law under which this Bureau is now operating, giving the Commissioner of Agriculture certain definite powers and authority to put the work on a self-supporting basis. At the end of the first year, we are very glad to report that the work has been self-supporting and the farmers have paid the entire cost, paying the fee which has been as low as we could make it after allowing for the probability that some of the fees would not be collected. It would seem almost necessary that an amendment be made to our law at the next session of the Legislature to the effect that anyone who had not paid the fees on the work previously done could not have the privilege of having work done during the current year, or until such time as the bill was paid. This would equalize the burden and would not be using the fees paid in by one farmer to help pay for the work done for the non-paying farmer. This recommendation will be made and data furnished to show why we believe it necessary.

Our new law did not accomplish all that we had hoped for but we expect to be able to discover most of the weak spots before the Legislature meets and corrects them. It would be very agreeable if the terms "certified seed" could be defined in the State law and have the seed inspected only by the department officials. We are having some difficulty owing

to the fact that private companies are putting out personal certification tags and while in some cases their work has been just as good as that of the State officials, in others it has been so crude that the word "certified" has been more or less abused in the potato trade.

Besides the details incidental to handling both the field inspection of plants and the shipping inspection of potatoes, this Bureau has tried to assist the growers in every way possible both to get information on where foundation stock could be obtained, and also by investigating the marketing. With the consent of the Governor and Council and acting under your instructions, I spent practically nine weeks visiting all the states which purchased seed potatoes from Maine. The expenses of this trip were paid by the Bangor and Aroostook Railroad and some other transportation companies who were interested. A special report has been published covering in detail the results of this trip. The benefits derived were the first-hand knowledge of how we, as a seed producing state, were regarded in the territory which we are serving. This information has helped this Bureau which is trying slowly to correct some of the evils which have crept into the trade. In passing, it may be only fair to say that our growers took kindly to the quite severe criticism which we offered them upon our return, and they have cooperated very well in trying to get a better product for their own foundation stock. In fact, our growers have been so anxious to get better seed that we are wondering just what the outcome is going to be.

This year there has been entered for inspection more than 24,000 acres of potatoes. For the larger part, these acres will be planted with seed secured from other growers within a limited area and the growers who are purchasing this seed will stay in certified seed work just as long as they are able to purchase seed which will pass certification the following year. This is all well and good as far as it goes, but it is hoped that this Bureau may be able to interest more people in maintaining seed plots of their own. The reason for taking this attitude is that eventually, unless there are more growers who become interested in seed plot work, the men

who now have foundation stock for sale will not be able to supply the demand.

We have been very insistent during the past year that some tuber unit work be done by each grower to acquaint him with the exact quality of stock which he is growing so that he may know whether or not he can hope to improve his stock. It may be that the tuber unit method is not the proper method for us to advocate and we will make a study this year of hill unit work, and if this seems better, we will advocate it when the proper time comes.

There is a great deal of work to be done with the degenerative diseases by our various plant pathologists and this Bureau takes the position that we must keep just as close to the pathologists as we can, and when recommendations are made we must be ready to put them into effect, especially those concerned with certification work.

I have noticed that the contact made in the various southern states has been of real value this past growing season, when we wished information on crop conditions or in fact, any information regarding potatoes in certain territories. It has been a pleasure to meet, in Maine, some of the men with whom we spent some time in the South.

Since your representative made this trip, it has come to our attention that at least one organization in the state is now keeping a man continuously in the seed buying territory calling on the trade. Several of the independent growers and shippers have also taken occasion to visit our southern customers and study that market. This, with the idea of learning what they must furnish to satisfy the demand of the trade.

MAINE SEED IMPROVEMENT ASSOCIATION.

Over a period of years, the person in charge of the seed certification work has always been elected secretary of the Maine Seed Improvement Association and this requires that two weeks out of each year be given over to arranging for and holding the annual joint exhibition with the Maine Pomological Society and the Maine Dairymen's Association. In 1922 this meeting was held in Lewiston, and the follow-

ing year in Portland. This is the only exhibition held in the state where the farm crops go to make up the entire exhibit. Meetings are held for three days and programs arranged dealing with the live topics in crop production.

As secretary of the Seed Improvement Association, I want to extend my thanks to the President, Mr. Leland, and to the Extension Service, especially to Mr. Gardiner and Mr. Jones for their help in arranging and handling the exhibits at our annual meeting.

SUMMARY.

In developing a program such as has been attempted in seed certification work, it becomes necessary to have the backing and good-will of all allied agricultural organizations within our State. It is only fair to say that we have had the closest cooperation from every organization and from a large group of individuals who have helped us with the many problems incidental to our work. The College of Agriculture and the Maine Agricultural Experiment Station came to our rescue last winter when we needed a large experiment performed and carried on for a period necessary to get results, a nine-hundred pot experiment determining the damage which we might expect from the selling of potatoes carrying a stem-end browning. This work was under the immediate direction of Dr. Folsom but the College furnished the greenhouse and the necessary heat. This Department collected the material from the various growers, purchased the necessary number of plant pots and furnished the small amount of labor.

The point which I wish to make at this time is that we have received the finest cooperation from everyone in our work. Feeling as we do at present, we have no hesitancy about asking for help from any of the agencies within our state or from the United States Department officials. Mr. P. M. Lombard of the Bureau of Horticulture is carrying on the Aroostook Farm at Presque Isle, nearly two hundred plots planted with samples from our certified seed growers. This gives us an index to at least 20% of our entries and helps us to determine in a measure the value of our in-

spectors' reports. This work is in general charge of Professor William Stuart of the United States Department of Agriculture and to him we are indebted for his assistance.

I wish to express my thanks to you for the suggestions given me in the work of the Division of Plant Industry. I also desire to express my gratitude to Mr. C. A. Stetson of Caribou, our chief field inspector, as well as to all my associates in the Department.

Respectfully submitted,

E. L. NEWDICK, CHIEF,

Division of Plant Industry.

REPORT OF STATE HORTICULTURIST.

To Honorable Frank P. Washburn, Commissioner of Agriculture of Maine:

I herewith present my biennial report covering the period from July 1, 1922, to July 1, 1924.

There has been an increased interest in all lines of horticultural work, especially planting apple orchards. The nearness to the best markets of the world, coupled with the fact that our soil and climatic conditions are such that we can and do produce the finest quality of fruit, has led many to turn their attention to orcharding. The Extension Service and the Farm Bureau made a drive to get their members to pool their orders so as to secure the lowest wholesale prices for young trees which made a very material saving to those who took advantage of it.

We went to the nurseries where the stock was grown and made an inspection before it was shipped into the state. This insured trees that were free from disease and insect pests. Crown gall is the disease that has given us the greatest amount of trouble. It usually appears as a tumor-like growth near the ground line. Practically all the fruit trees and small fruit plants are attacked by this disease and in this state apple trees and the red raspberry bushes seem to be the most commonly affected. It is quite probable that all crown gall of plants is produced by the same organism and can be communicated from one host to another. This disease has been the subject of much contention among growers and nurserymen, as it is always found to a greater or less extent on nursery stock. There is little question but that the trees free from this disease and grown under practically the same condition as affected trees will produce more and better crops and will live longer.

Growers are advised to reject trees showing this disease and nurserymen are required to cull out and destroy trees

showing evidence of crown gall. There is no control for this disease and trees showing traces of it should never be planted, and trees that show the aerial form should be grubbed out and burned, as they will never make profitable orchard trees.

The previous season was particularly dry in the states where the nursery stock was grown and as a result the trees were undersize and some disappointment was felt by those who received them, but in spite of this the trees have made a fine growth and are now fully up to normal size.

There are hundreds of acres of choice orchard land in the state with a slope too steep to profitably grow hoe crops, but which will produce the highest quality apples. These



Hillside Orcharding in Maine.

lands can be bought at comparatively low prices and when set to apple trees and properly cared for will yield the greatest profits of any farm operation and will greatly enhance the value of the farm.

There has been no serious outbreak of insect pests and more spraying and dusting has been done than ever before.

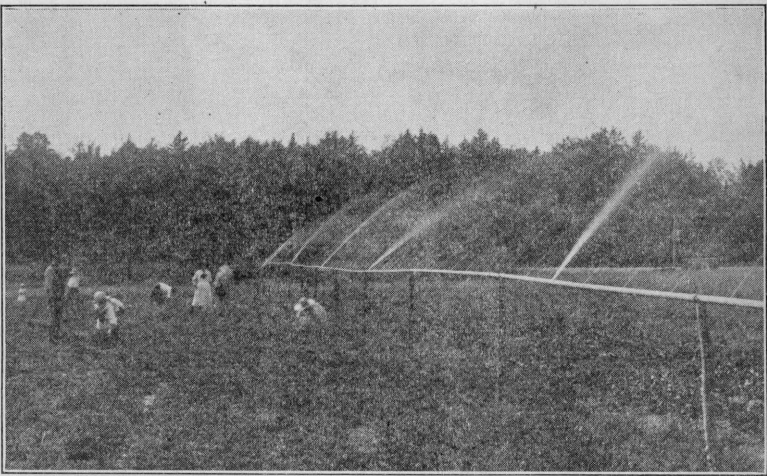
Orchardists have found that they can control the *Trypeta* (railroad worm) by using an arsenical spray early in July, thus saving thousands of bushels of apples that in years

past have gone to waste. We have discovered three slight infestations of San Jose scale and believe we have cleaned them up.

SMALL FRUITS.

We have encouraged the growing of small fruits by assisting in the selection of varieties that were adapted to their particular conditions, environments and markets.

A few of the growers have installed irrigating systems which have increased their crops very materially and prolonged the picking season, which enabled them not only to secure larger crops but to get better prices, as the first fruit was larger and more attractive. We have also given assistance to the blueberry growers, especially those who were



Sprinkler System for Strawberry Growing.

just starting. This line of horticulture in Maine is of much importance, as it gives employment to hundreds of men and women in the picking and canning season, and brings into the state a large amount of money and should be encouraged to the utmost.

BEEKEEPING.

Beekeeping has been encouraged by the Maine Department of Agriculture, and the work has been directed by the

Bureau of Horticulture. We have devoted considerable time in this work trying to encourage better methods of handling them and marketing the products.

Whenever we have had reason to believe that foulbrood existed we have made careful inspection and had those colonies cleaned up, either by destroying with fire or disinfecting all the hives and everything that might work as a carrier of the disease. In the past two years we have held meetings in different sections of the state where the apparent interest was sufficient to warrant holding them. These meetings have been well attended and as a result the quality of the products have been much improved and the Maine beekeepers are getting the very highest market price for their honey.

Where the wayside market has been properly developed the producer has sold his honey at retail prices and at the same time created a better demand for both extracted and comb honey.

The work done with the beekeepers the past two years is summarized as follows:

Number of men reporting by counties is as follows:

<i>County</i>	<i>No. of Beekeepers.</i>	<i>No. of Colonies.</i>
Androscoggin	28	209
Aroostook	25	453
Cumberland	39	185
Franklin	16	106
Hancock	7	58
Kennebec	39	560
Knox	9	73
Lincoln	18	61
Oxford	18	150
Penobscot	36	304
Piscataquis	6	40
Sagadahoc	11	50
Somerset	24	292
Waldo	21	156
Washington	5	42
York	13	91

Number of bee meetings for two years.....	11
Attendance	419
Number reporting diseases in bees	11
Number of colonies treated for disease.....	37
Number of colonies inspected to be shipped out of state	18

SUMMARY FROM JULY 1, 1922, TO JULY 1, 1924:

Number of meetings attended, 90. Attendance.....	7,578
Miles traveled	6,080
Number of nurseries inspected	78
Number of spraying and dusting demonstrations.....	42
Number of pruning demonstrations.....	29
Number of different insects sent to office to be identified	91
Number of diseases of trees and plants identified.....	49
Nursery stock coming from out of state inspected for insects and diseases	2,720
Number of trees condemned	244

Respectfully submitted,

G. A. YEATON,

State Horticulturist.

REPORT OF FIELD AGENT, GYPSY MOTH WORK.

To Honorable F. P. Washburn, Commissioner of Agriculture:

I herewith submit my report as field agent in charge of Gypsy moth work for the two years ending June 30, 1924.

The work of the past two years has been carried on along the same lines as in previous years. The three divisions of the work may be termed creosoting egg clusters, spraying for larvæ, and the distribution of parasites. A division of labor has been carried out whereby the men on the moth work are taken, from time to time, for work on the European Corn Borer, especially during the summer season when a quarantine is maintained. There are sections of the state where it is apparent that the Gypsy moth is not increasing very fast but remains at about the same standard. This situation, it is believed, is due to the fact that egg clusters, above the snow line, after being subjected to a temperature of twenty-five degrees below zero, will not hatch. Another factor is that severe rains at some seasons of the year, especially in the spring, have a tendency to destroy a great many of the larvæ. The parasite work, which has been carried on for a great many years, is now showing good results and it is possible to make recoveries in the southwestern part of the state in sufficient quantities to encourage the Department in its belief that parasite work will eventually be an important factor in the handling of the moth situation.

The power sprayer which we are now operating for the third season has given excellent results in the territory where it has been used, not only in handling the Gypsy moth situation but destroying the elm-leaf beetle which feeds so heavily upon our elm trees. Cooperative spraying work has been done each season with the towns and cities of

Berwick, South Berwick, York, Kennebunk, Biddeford, Saco, Bath, Auburn, Sanford, Lyman and Wells. The towns are purchasing the lead and this Department is furnishing the machine and the men. It is to be regretted that there are not more auto-sprayers owned by this Department so that we could assist more towns, but these are expensive machines and while we believe fully that they pay a dividend, it is not thought feasible to ask for any more, owing to the fact that the division is trying to keep its expenses within a reasonable limit. About five tons of powdered arsenate of lead are used every season and, as far as the inspectors have been able to determine, satisfactory results have been obtained in every instance.

PARASITE WORK.

The policy has been, in this branch of work, to cooperate very closely with the United States Department of Agriculture Laboratory at Melrose Highlands, Massachusetts. Mr. Nelson Trafton, our man in charge of parasite work, has been instructed to work just as closely as possible with Mr. C. W. Collins, entomologist at the government laboratory. Mr. Trafton has made plantings, the last two years, in the following cities and towns:

Monmouth	55,000
Wells	37,000
Winthrop	30,000
Goodwins Island.....	23,000
Hallowell	14,000
Farmingdale	23,000
Bath	13,000
Westport	15,000
Boothbay	38,000
Southport	4,000
Edgecomb	36,000
Damariscotta	22,000
Bremen	15,000
Bristol	34,000
Nobleboro	18,000

Making a total of 377,000 Anastatus parasites liberated during the period covered by this report. This is a parasite that works on the Gypsy moth egg cluster.

The following towns were colonized with *Apanteles Melinosus* which is a parasite that feeds on the Gypsy moth larvæ and pupæ: Winthrop, Monmouth, Leeds, Wells, Litchfield, Harrison, Otisfield, Augusta, Chelsea, Windsor, Whitefield, Pittston, Warren, Waldoboro, Damariscotta, Nobleboro, Greene and four other towns, 500 each, making a total of 10,500 parasites of this particular type. In carefully reading the above it will be noted that there are parasites that work on the Gypsy moth in its different stages and, by encouraging the breeding of parasites to work in a series, it is hoped to accomplish more than through a single stage parasite. In addition to the distributing or colonizing of parasites, it is necessary from time to time to collect, in the field, thousands of larvæ and egg masses as well as Brown-tail moth webs, to send to the Federal laboratory in order that a determination may be made whether or not the parasites are surviving the many changes in the weather, and also to determine their effectiveness as a destroying agency.

In my opinion, the parasite work should receive every encouragement and it will be our aim to maintain the close cooperation that now exists with the Federal officials.

BROWN-TAIL MOTH.

During the last few years, a gradual increase has been noted in the number of Brown-tail moth webs present in southern Maine. In the spring of 1923, several towns in York County were notified of the presence of this destructive pest and the webs were removed. In the late winter of 1924, Mr. Smulyan was sent here by A. F. Burgess, in charge of moth work of the United States Department of Agriculture, and in company with him the following towns were visited and found to be infested by the Brown-tail moth: Kittery and Elliot, infestation very heavy; Berwick and South Berwick, York and Wells, infestation general but webs not in large numbers; North Kennebunkport, Biddeford, Saco, Old Orchard, Scarboro and Cape Elizabeth, South Portland, Falmouth, Yarmouth, Westbrook, Gorham, webs scattering. It is thought that there has been a 50%

increase in the number of Brown-tail moth webs found in the spring of 1924, over that of the previous season. In the southwestern towns of our state, the increase has probably been about 100%.

It seems timely to issue a note of warning to those who have the Brown-tail moth webs on their property. Some work should be done each year to keep this pest from becoming too common because, besides defoliating the trees, they are a menace to human happiness, in that the tiny hairs on the body of the caterpillar and also on the female moth cause a very aggravating disturbance of the skin. A few years ago, when this pest was present in large numbers, the so-called "Brown-tail moth" itch was frequently encountered. At that time the Department had men in the field turning burlap bands on orchard trees, and it was not an uncommon occurrence for a man to be sick when coming into close contact with the Brown-tail moth larvæ.

· EUROPEAN CORN BORER WORK.

In addition to the moth work, as stated previously, this Bureau has been able to assist in the handling of the corn borer state line quarantine and during the summers of 1922 and 1923 maintained a force on three bridges between Maine and New Hampshire, stopping the importation of flowers or vegetables which would spread the corn borer. After the summer work, a fall scout has been made each year. In 1923 it was found necessary to quarantine forty-one towns in York and Cumberland counties, and the Department has since been forced to maintain a quarantine station at Portland to inspect shipments going out of this territory into the free area. Corn factories in York and Cumberland counties were inspected as were also the fields of the individual farmer furnishing corn to these factories. It was also necessary to see that the waste from the different factories was burned so that it would be made doubly sure that no spread of the borer would take place in this material.

CONCLUSION.

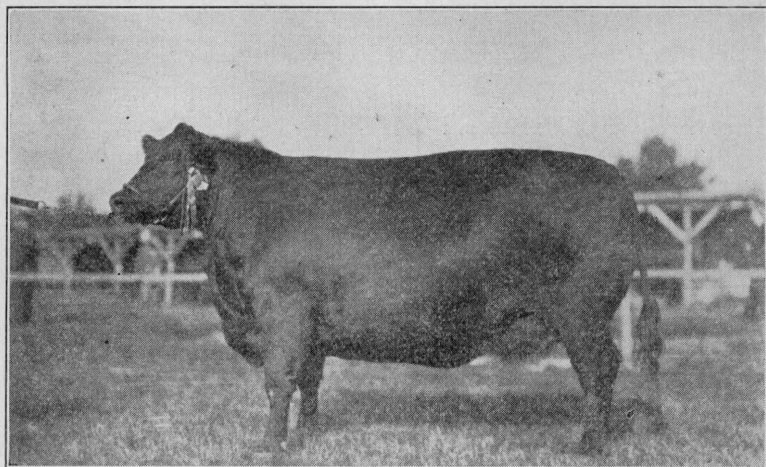
Besides the travel incidental to the field work, it has been necessary to answer many letters in request for assistance. Many hundred gallons of creosote have been shipped to individuals inquiring for the same and many individuals have been given advice and instruction in handling the Gypsy moth.

In submitting this report, I wish to thank you for the kind advice which you have always given me, also Mr. E. L. Newdick, Chief of the Division, for his hearty cooperation.

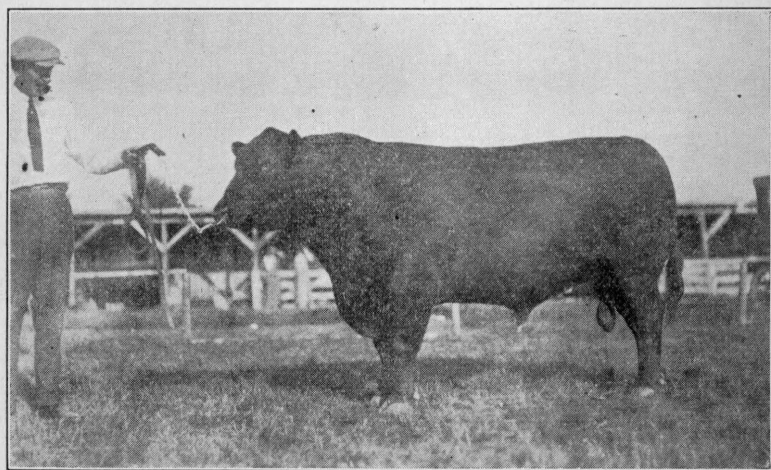
Respectfully submitted,

MELVIN H. MCINTIRE,

Field Agent, Gypsy Moth Work.



Purebred Polled Angus Heifer owned by Jefferson Farms, Inc.,
Jefferson, Maine.



Purebred Polled Angus Bull owned by Jefferson Farms, Inc.,
Jefferson Maine.

REPORT OF CHIEF OF THE DIVISION OF ANIMAL INDUSTRY.

To Honorable F. P. Washburn, Commissioner of Agriculture:

I herewith present my sixth report covering the past two years.

During this period there has been a steady decrease in the number of livestock on our farms as the following tabulation will show.

Number of cows	1921.....	150,426
" " "	1922.....	149,706
" " "	1923.....	147,753
Decrease in two years.....		12,673
Number of oxen	1921.....	4,922
" " "	1922.....	4,927
" " "	1923.....	4,537
Decrease in two years.....		385
Number of three year olds	1921.....	27,077
" " " " "	1922.....	21,822
" " " " "	1923.....	17,130
Decrease in two years.....		9,947
Number of two year olds	1921.....	35,613
" " " " "	1922.....	27,415
" " " " "	1923.....	25,509
Decrease in two years.....		10,104
Number of one year olds	1921.....	37,934
" " " " "	1922.....	34,979
" " " " "	1923.....	32,350
Decrease in two years.....		5,584
Total number of all cattle	1921.....	255,972
" " " " "	1922.....	238,349
" " " " "	1923.....	227,281
Decrease in two years.....		28,691

Number of Sheep	1921.....	86,977
" " "	1922.....	75,489
" " "	1923.....	<u>72,998</u>
Decrease in two years.....		13,979
Number of horses	1921.....	108,400
" " "	1922.....	104,786
" " "	1923.....	<u>101,310</u>
Decrease in two years.....		7,090
Number of colts	1921.....	5,103
" " "	1922.....	3,717
" " "	1923.....	<u>2,799</u>
Decrease in two years.....		2,304

There are no available figures on the number of hogs from year to year but eliminating this branch of livestock there appears to be 52,064 less animals on the farms of Maine than there were two years ago. To attempt an analysis of this fact and give the reasons for such a reduction would take more time than can be allowed in this report. The general unattractiveness of the outlook from a financial standpoint, and the inability of the farmer, because of these conditions, to pay a wage for hired labor which is in keeping with wages paid in other lines of industrial work, are probably the principal factors in this decline in livestock. But, as livestock is the backbone of agriculture for the greater part of Maine, the decline is alarming and should be seriously considered by every one having the interests of agriculture at heart in our State.

DAIRY AND MILK INSPECTION.

There have been several changes in the personnel of those doing the work since the report of this department was published two years ago. Mr. Forrest A. Barbour was appointed State Dairy Inspector and commenced his duties on September 15, 1922, and he still holds this position. During his term of office several changes have been made that are noted in this report. The activities of the State Dairy Inspector have broadened very greatly during the past few years and he is called upon for many things not previously included in his duties. Mr. Barbour is a hard working, conscientious official, who is striving to fulfill all of the

demands made upon him. He has been handicapped in having to change his assistant too often because the salary paid that official is not sufficient to make it a permanent position for any man and until it is increased it will simply be used as a stepping stone to some better position.

SHEEP DEPARTMENT.

Several years ago it was thought advisable to give sheep husbandry as much encouragement as possible as it was felt there were many places in Maine that were really better adapted to this branch of livestock than any other, and at that time sheep husbandry was in bad condition as disease was taking a large toll and wool was being sold to local dealers who made sure of their own profit regardless of the producer. Mr. Crawford, the Sheep Specialist of the Department, has accomplished a great work in assisting the sheep raisers in Maine, not only in eliminating disease and improving flocks by better breeding and selection, but through his efforts the Maine Sheep and Wool Growers Association was organized and is being successfully managed. This has furnished, by careful grading and marketing and to quite an extent manufacturing, a better market for the farmers' wool, and returns to him have been considerably above market quotations. There is to-day a greater incentive for any person to engage in the sheep business than formerly. Mr. Crawford's report in detail will be found appended.

LIVESTOCK SANITARY WORK.

During the past three years this branch of the work has received my personal attention. During the first few months several changes in methods, as noted in my last report, were found necessary. Some changes have also been made in office methods, the better to keep the work in proper shape so that a complete record of what has been accomplished will be on file, and so arranged that any branch of the work can be looked up without serious delay. To be sure, a much more elaborate system of filing would have its advantages, and with such a system practically every

detail in every line of work would be available for inspection at a moment's notice. But in states where such an elaborate system of filing is maintained it requires from three to five clerks to keep the work in hand, while so far, I have carried on the work of my office with the assistance of one. Needless to say, however, this one is not only very efficient but is interested in her work. This is very fortunate as the office room furnished me would not admit even a second clerk.

In July, 1917, an agreement was culminated between Hon. Boyden Bearce, then Livestock Sanitary Commissioner, and the Federal Bureau of Animal Industry whereby cooperative tuberculin test work was started. Dr. C. W. Purcell of Biddeford was employed on the part of the State and Dr. Harry C. Kultz was detailed by the Bureau. Dr. Kultz, however, resigned on October 31 and Dr. F. L. Stevens was appointed. Since then this force of cooperative testers has been increased to six. The salary agreed upon for Dr. Purcell in 1917 was \$1,500.00 a year and now after seven years of faithful service he is receiving the same pay regardless of the difference in living costs. The other two state inspectors who have been hired since are receiving the same salary. The Federal inspectors have, during this time, had their salaries increased from time to time, being graded somewhat by their length of government service. All are receiving over \$2,000.00 a year. This is not right as state inspectors are expected to and do accomplish as much test work as the government men and should receive equal pay. I am earnestly recommending that the pay of our three cooperative inspectors be increased to \$2,000.00 per year, and I have pledged to them my best efforts in securing this increase for them this year.

THE STANDING OF MAINE.

That the eradication of bovine tuberculosis in Maine has reached a point that should be viewed with pride by every man and woman in our State can best be illustrated by the following tables, compiled by the Federal Bureau on 1923 figures from the northeastern states. Our own figures on

the last fiscal year, July 1, 1923, to July 1, 1924, as shown elsewhere in this report, give even a smaller percentage of disease.

	Extent of Tuberculosis.	Percentage of Cattle Under Supervision.	Percentage of Farms Infected with Tuberculosis.
Maine.....	1.8%	38.0%	5.9%
Pennsylvania.....	7.4	12.1	11.8
Vermont.....	12.4	19.0	20.2
New York.....	14.0	27.2	36.8
Maryland.....	14.2	18.4	24.8
New Hampshire.....	14.4	20.5	24.3
Delaware.....	17.2	24.5	26.2
Rhode Island.....	17.8	4.5	31.5
New Jersey.....	22.2	6.8	29.4
Massachusetts.....	28.5	8.6	45.1
Connecticut.....	31.2	18.8	48.8

Of the forty-eight states and the District of Columbia, ten states show above twenty-five per cent infection, fifteen states from ten per cent to twenty-five per cent, thirteen from five per cent to ten per cent and eleven less than five per cent.

In the states that have neglected the importance of tuberculosis eradication, until obliged to face the situation by public sentiment, the cost of the work which they are now obliged to do is appalling. New York has spent eight million dollars for this work in the past two years. Pennsylvania is paying two million a year for indemnities on tuberculous cattle. Here in Maine seventy-five thousand dollars was allotted to my Division. This includes not only all livestock sanitary work, but milk and dairy inspection, together with the work of the Sheep Specialist, and I am glad to report that I have kept within my appropriation, the only addition to the above named allotment of state money being the money received for milk licenses. This has been of considerable assistance in that line of work. The salvage money received on reactors goes directly into the contingent fund and is of no direct benefit to this Division.

However, in years previous to this it has been found necessary to ask for additional funds from this contingent fund of the Governor and Council, and I am very glad to say that in every instance they have seen fit to grant us the necessary funds for carrying on this work. I firmly believe, with the small percentage of bovine tuberculosis that exists in the State today, and the keeping of all other contagious and infectious diseases of animals well in hand, that it will not be necessary to ask for any increase in our appropriation for this Division.

PERMANENT ERADICATION.

It has been proven very conclusively that something besides the tuberculin test is necessary if the disease is to be eradicated where it once has had a foothold. This accounts for many failures of the past, and to-day both State and Federal authorities are giving much more attention to cleaning and disinfecting the premises. In this connection it is interesting to study the figures put out by the Federal Bureau covering 24,550 tuberculous herds containing 571,301 cattle. 16,080 of these herds, or 65%, were cleaned up on the first test and no further reactors found. 4,608 herds required two tests before they tested out clean; 2,137 required three tests; 1,039 four tests; 386 five tests; 188 six tests; 79 seven tests; while 33 herds required eight tests before the disease was finally eliminated.

It is well for us all to keep in mind that there is no diagnostic test that is 100% perfect. Under the old subcutaneous method of testing quite a percentage of animals would not respond to the test and very unfortunately a large portion of these were animals in which the disease had been present several years and were very often the spreaders. With our modern methods of testing very few of these get by and yet occasionally we do find one to-day, and in the government figures just given doubtless some animals that were diseased did fail to react in some of the herds where so many tests were required to clean up. A veterinary should not be governed entirely by the tuberculin test, but should

study the history of the herd, physically examine the animals and use his "gray matter" in determining reactors.

AREA WORK.

Practically all the cities, many of the larger villages and some towns now have local ordinances requiring the tuberculin test on all cows furnishing milk, and some require it on all dairy animals furnishing any dairy product, while not a few require the test to be applied to all cattle. In most of the principal cities we have furnished this test free for two years and now it is up to the local health officer to see that the ordinance is carried out. A few have fallen down on the job as it required some work and expense to have it done locally and they seem to lack the initiative to put it across. Most of the cities, I am glad to say, have taken up this re-test work and have put it through.

The country area work is a different problem and would be difficult for me to handle with any degree of system were it not for the cooperation and assistance of the County Agents and the Farm Bureaus. Hancock, Kennebec, Penobscot, Piscataquis and Waldo Counties probably lead in the amount of county test work, while this year increased interest and assistance by the County Agent is shown in Aroostook, Somerset and York Counties. I wish to express my sincere appreciation for this assistance on the part of the County Agents and the Farm Bureau organizations and trust that the present friendly relations will always exist.

The following will give a summary of the livestock sanitary work in concise form for the past two years.

WORK ACCOMPLISHED FROM JULY 1, 1922, TO JULY 1, 1923.

Cattle tested by our cooperative inspectors	52,623
Cattle tested by veterinary practitioners	7,376
Cattle tested for interstate shipment	4,750
Total number tested	64,749
Total number reactors	1,197
Percentage of reactors	1.84%
Paid for condemned cattle	\$68,086.35
Paid for 21 Brighton reactors	1,075.18
Received and turned into State Treasury for salvage on condemned cattle	\$12,541.08

Horses brought in on permit and examined for glanders	3,676
Horses mallein tested	17
Horses condemned for glanders	7
Amount paid for horses condemned, including disinfecting.....	\$259.00
Outbreaks of hog cholera reported	26
Hogs treated	273
Hogs sick	105
Hogs died	70

WORK ACCOMPLISHED FROM JULY 1, 1923, TO JULY 1, 1924.

Cattle tested by our six cooperative inspectors	54,201
Reactors found	738
Percentage of reactors	1.37%
Cattle tested by veterinary practitioners	12,468
Reactors found	161
Percentage of reactors	1.3%
Cattle tested for interstate shipment	5,526
Reactors found	148
Percentage of reactors	2.7%
Outbreaks of hog cholera reported	17
Hogs treated	427
Hogs sick	216
Hogs died	103
Amount paid for hog cholera serum	\$465.40

TOTAL WORK.

Cattle tested	71,624
Reactors found	1,047
Percentage of reactors	1.47%
Paid for condemned cattle	\$61,377.84
Maine cattle tested and condemned at Brighton, Mass.	21
Amount of indemnity paid	\$946.79
Received and turned into State Treasury for salvage on condemned cattle	\$12,845.30

Note: Of the 12,468 cattle tested by veterinary practitioners 908 herds containing 8,393 head were tested by accredited veterinarians.

Horses brought in on permit and examined for glanders	4,014
Horses mallein tested	42
Horses condemned for glanders	9
Amount paid for horses condemned, including disinfection of stables	\$428.00

From the preceding tabulation it will be seen that the number of cattle tested has yearly increased, while the percentage of diseased animals found is yearly decreasing. I trust that the future will show equally good progress.

Being grateful for the hearty friendship, assistance and good-will that has at all times been given me, not only by yourself, but by every member of our Department, I wish at this time to express my appreciation to all.

Respectfully submitted,

H. M. TUCKER,

Chief, Division of Animal Industry.

REPORT OF STATE DAIRY INSPECTOR.

To Herbert M. Tucker, Chief of the Division of Animal Industry:

I submit, herewith, my report for the two years ending July 1st, 1924.

Since assuming my duties on September 15th, 1922, I have tried to analyze the work required of my office. The great variety of work to be done and limited means at hand made it necessary for me to choose and stress those phases of the work which seem to be most urgent. During these first two years, I have endeavored to establish a workable program which would secure most efficiently the ends to which my position applies. With the chaos of inspections, regulations and laws of state, municipal and out of state, and inadequate means of achieving results, I have attempted to concentrate upon definite problems at the partial expense of some which seem less urgent.

I have consequently divided my work into three different heads; first, market milk inspection; second, creamery milk inspection and creamery laws; third, miscellaneous activities. Miscellaneous activities include those duties which have not, of necessity, received my greatest attention.

MARKET MILK INSPECTION.

During 1923, five hundred and ninety-two recorded inspections of dairies where Maine market milk is produced were made by the State Dairy Inspector and his Assistant. This does not include reinspections, of which several were made and in some cases two or three times, nor does it include inspection of dairies belonging to creamery patrons.

Wherever possible, inspections were made with the local Milk Inspector of the town where the producer's product

was sold. Constructive criticism was made wherever opportunity afforded and, I believe, to good effect.

In twenty-four cases a time limit for required changes was set and a reinspection made. Three producers failed to make required changes and after a hearing their licenses were revoked; of these, two dealers were reinstated later, they having complied with the requirements made. One prosecution was instituted for milk below standard for butter fat and the dealer found guilty.

Number of inspections by counties were as follows:

Androscoggin	185	Oxford	2
Aroostook	3	Penobscot	29
Cumberland	98	Piscataquis	21
Franklin	6	Sagadahoc	8
Hancock		Waldo	
Kennebec	44	Washington	19
Knox	27	Somerset	11
Lincoln	6	York	133
		Total	592

Number of inspections by months were as follows:

January		July	150
February	20	August	35
March	8	September	28
April		October	93
May	52	November	32
June	174	December	
		Total	592

Unsatisfactory conditions were as follows:

Water supply not properly located	1
Flanks and udders, milch cows, not clean	18
Barn not light, well ventilated or clean	100
Floors, walls and ceilings not tight or clean	106
Manure, a probable source of contamination	92
No milk room	208
Improper sterilization of utensils	19
Improper cooling of milk	30

It appears that one of the needs of the milk dealer of today is a proper room for the handling and cooling of his product. From the report of inspections made, about one milk dealer out of every three has no milk room but handles—and in most cases bottles—his milk in the kitchen or woodshed.

A departure from the method of issuing licenses in 1923 was made in 1924. All dealers selling a considerable amount of milk or cream which they produced or handled, have been subjected to an inspection similar to those made during 1923, either by state or local inspection, before a license has been granted. A few licenses have been withheld on account of unsanitary conditions. This has caused some delay in issuing part of the licenses applied for, but I feel that a higher degree of sanitation has been obtained on account of these inspections.

The importance of bacteria counts is becoming more in evidence in milk inspection work. The Dairy Bureau, in many cases, has been seriously handicapped because, until recently, there has been no bacteriological apparatus available; this apparatus has now been purchased and installed. There is a growing tendency on the part of producers of milk to cut down their bacteria counts where the counts can be ascertained. Some labels are being used, such as "Grade A." In absence of any law defining "Grade A.", it is believed milk dealers are justified in using this label unless their product can be proved to be inferior to the popular opinion of "Grade A." milk. This is usually impossible to determine in absence of a means of taking bacteria counts.

Five milk dealers meetings and one milk inspectors convention were held, with attendance varying from eight to over one hundred. It is believed that much good has come from these meetings and more are being planned for 1924.

In 1923 there were forty-eight milk inspectors appointed by their respective towns, and conducting milk and dairy inspection work to a greater or less degree. There is, however, only a very loose connection between municipal and state inspectors. In 1924 eight additional towns have appointed milk inspectors.

A circular letter to local milk inspectors was started in December, 1922. These letters, which cover current topics, are designed to keep inspectors in closer touch with one another and to create a greater interest in milk inspection work. The letters are sent out on the fifteenth of each month.

Milk license plates were first issued in 1923. It was believed that, besides being more convenient for dealers, there would be a tendency to comply more strictly with Section 5 of Chapter 66, requiring the posting of license numbers on milk vehicles. There is still some laxity in this respect.

CREAMERY MILK INSPECTION.

Seventy different ice-cream factories, receiving and shipping stations and creameries were visited. Several of these were visited a second or third time for various reasons. Recommendations for improvement in sanitary conditions and efficiency were made at many creameries. One creamery was condemned on account of unsatisfactory sewage disposal; a proper sewer was installed at once.

Particular care was taken to investigate methods used in applying the Babcock Test.

The following points in question were noted:

1. Had the tester a certificate according to Chapter 37, Section 30 of the Revised Statutes?
2. Temperature at which fat column is read?
3. Are bottles marked as prescribed in Chapter 37, Sections 28 and 29 of the Revised Statutes?
4. Are cream test scales accurate?

Very few violations of these laws and regulations were found.

Violations were as follows:

Seven testers were found without certificates.

Eight testers were reading fat columns at an unsatisfactory temperature.

Four creameries did not have bottles marked by Maine Experiment Station.

Two cream test scales were condemned.

Violations were ordered remedied at once. Eleven examinations were given for a certificate to test, through arrangement with the Dairy Department of the University of Maine, College of Agriculture. Irregularities in sampling milk and cream at receiving stations were found in several cases. These irregularities were due, mostly, to lack of realization on behalf of the sampler of the importance of

samples proportionate in amount to the amount of product received. This is probably the greatest source of error, if any, in tests on patrons' milk and cream. More work in this direction is planned for 1924.

At the beginning of the year 1923 a hearing was held before the Commissioner of Agriculture at which several creameries were represented, for the purpose of preventing milk and cream excluded from the Boston market, being dumped on the Maine markets. As a result, wherever exclusions have been made, creameries have been requested not to accept their product. These requests have been complied with in most cases. A few instances have been reported where an excluded patron's product has been received, however.

One hundred and sixty-two exclusions were made during the past year, by the Boston Board of Health, sixty of which have been reinstated. Many of these reinstatements have been brought about through the efforts of the Dairy Bureau.

The requirements for excluded dairies were as follows:

Whitewash	104	Clean and drain barnyard	7
Build milk room	94	Provide proper cooling tank.....	6
Keep manure 50 feet from barn	83	Clean cooling tank	5
Clean stable	35	Keep pigs 50 feet from barn.....	4
Partition horses from cows.....	30	Remove privy from cow stable	4
Provide more light	29	Ventilate manure cellar	4
Seal ceiling	26	Ventilate barn cellar	4
Remove manure shed	14	Use bedding for cows	4
Clean cows	14	Repair barn	2
Repair stable floor	13	Provide proper location for	
Repair milk room	12	cooling tank	2
Clean milk room	11		

According to the Boston Board of Health the percentage of dairies excluded to the number of inspections made in Maine, is very small compared with exclusions in other states supplying the Boston market. This speaks well for the sanitary condition of Maine dairies.

A moving picture machine was purchased during the summer of 1923 with films on the proper methods of production and food value of milk. Approximately 1,800 farmers and their families have been reached at forty different showings. It is believed that these pictures have had a beneficial result in the production of better milk.

MISCELLANEOUS ACTIVITIES.

The lack of dairy exhibits at the various fairs in 1922 and 1923 was to be deplored. In the fall of 1923 an experiment to determine a satisfactory method of arousing interest in competitive milk exhibits was tried at the Somerset Agricultural Association Fair. Previous to 1923, no milk or cream had been exhibited as no premiums were offered.

Letters were sent to the retail milk dealers of Somerset County, who were eligible—about fifty in number. As a result, fourteen contestants were entered. Ten exhibits scored better than 90 points.

On account of the demand, educational work relative to the food value of the milk and in the absence of any other agency, some exhibits and programs have been presented advertising the food value of dairy products. Puppies raised on milk versus puppies raised on puppy bread were exhibited at several fairs, talks were given to Parent-Teachers' Associations and moving pictures were shown to three thousand school children.

A survey to determine the price paid per pound of butterfat by the various creameries was conducted in 1923. This has been continued this year by the Division of Markets.

We have been extremely unfortunate and greatly handicapped in frequent changes of assistants. I have had three different assistants in less than two years. As soon as an assistant has been broken in he begins to look for a more profitable position; the low pay received is unquestionably the cause of this.

I wish to express my deep appreciation of the great help and cooperation Messrs. Umerhinde, Small and Osgood, as Assistant Dairy Inspectors, and Miss Lippincott, as clerk, have rendered me. Their efforts have been untiring. Cooperation with the members of the Department has been most agreeable, for which I wish to express my sincere thanks.

Respectfully submitted,

FORREST A. BARBOUR,

State Dairy Inspector.

REPORT OF THE SHEEP SPECIALIST.

To H. M. Tucker, Chief of the Division of Animal Industry:

I herewith submit my report for twenty-four months ending June 30, 1924.

The program of work on the elimination of the various parasitic diseases among sheep has been kept up with very gratifying results. In communities where demonstrations on treatment for parasites have been given the flocks are found to be much more thrifty and the production of wool and lambs shows a substantial increase.

Many sheep owners still neglect the application of proper drenches even though the expense and labor involved are very slight. Without doubt the production in both wool and lambs matured could easily be increased at least twenty-five per cent which would turn the present unprofitable sheep to profit earners.

More attention should be given to the production of such crops as can be grown cheaply and which will supply the requirements of sheep. The latter have a big advantage over all other farm animals in the fact that all food required can easily be produced on the average farm with a minimum of expense and slight amount of labor.

Every sheep owner should sow a sufficient amount of rape, or a mixture of oats and rape, to meet the requirements of his flock. This crop matures at a time when the pastures are usually very dry and the lambs need extra food to fit them for the butcher. The ewes that are kept should be put in a thrifty condition for breeding.

A sufficient crop of turnips or beets or both should be grown to supply the necessary succulence during the winter months. Large productions on small areas are possible and the quantity should be based on an average of one quart for

each sheep per day. Oats can be easily grown on every farm and furnish, together with turnips, all the grain that is needed to keep a flock in a highly thrifty and productive condition.

“More and Better Sheep for Maine Farms” is a sound policy, deserving favorable consideration by thousands of farmers as a means of turning loss into profit, eliminating to a large degree the unsatisfactory labor question, also the big question of where the cash is coming from to purchase the necessary foods, tools and other supplies.

Sheep should replace thousands of low-producing, money-losing, boarder cows. This would relieve high producers and get for their owners much nearer the cost of production than at present. Sheep, because their requirements for grain and all other foods can be easily supplied on all farms, will make those located a long distance from the market more profitable by eliminating the heavy overhead in transporting products and supplies to and from the market, leaving farmers free to do much work now being done by hired help.

Present economic conditions are not the result of rapid overnight changes, but have been coming gradually for the past few years. While some of the leading agriculturists have repeatedly given sufficient warnings, most farmers have contented themselves with the idea that the present conditions would adjust themselves, as in the past, and have made no attempt to prepare for conditions now existing.

In this period of adjustment, it is neither desirable nor advisable to completely eliminate any one branch of farming unless such is found to be necessary because of location or of soil or climatic conditions, features which in many instances have not received much consideration in the past and which have caused many disappointments and many losses.

Balancing the farm program, according to the present conditions, together with location in regard to markets and the actual needs of consumers, is the only safe and sound solution of the present difficulty.

Farmers who have little or no knowledge of sheep husbandry should begin with from ten to twenty-five sheep,

being especially careful in selecting good, healthy ewes, of a breed that is pleasing to the eye and possible of high production in both wool and lambs. While sheep require a relatively small amount of care, yet the old idea that they will thrive on weeds and waste, that no other animal will eat, is filled with danger and is sure of loss when practised.

The present low production of both lambs and wool is entirely needless and anyone who is satisfied with the present average production of six and one-half pounds of wool and seventy-five per cent of lambs grown to maturity can never succeed. Production of both wool and lambs can be increased substantially by more careful selection of breeding ewes and rams which possess the desired qualities.

Farmers who use purebred rams are getting more satisfactory results in both wool and lambs, and considerable time is used in encouraging sheep men to purchase more of them. Each year lists of those having blooded rams to sell, and those wishing to buy, are kept and have proven of great assistance to those who are unable to leave their farms to purchase. Complete details are obtained so that a satisfactory description can be furnished purchasers, resulting in many satisfactory sales. This line of work is being enlarged and is worthy of all the labor and expense necessary.

As Secretary of the Maine Sheep and Wool Growers' Association it gives me much pleasure to report a steady, healthy growth in membership, as well as in the volume of business which is satisfactory to the management and members.

During the seasons of 1922 and 1923 we received from the members 128,404 pounds of wool, a part of which was sold as grease wool, and the balance manufactured into suitings, bed blankets, shirts, pants, yarns, sweaters, etc., which were sold mostly to consumers, thus making it possible for them to purchase pure, native, virgin wool garments at low prices, and at the same time returning to the producer an increased price for his wool.

It is interesting to report that a large percentage of the finished goods is shipped to customers out of the state and this is creating a growing demand.

The net gain in price to the members, over the price paid

by local buyers for the years 1922 and 1923, was \$15,393.74.

The amount of wool received and on hand for the season of 1924 is 60,922 pounds. Due to an unsatisfactory wool market, none of this season's wool has been sold, but plans are being made to have manufactured a sufficient amount to fill the needs of our customers. At present the wool market is more steady, and with a better demand for wool, prices will doubtless find a more satisfactory level in a few weeks when all surplus wool will be sold.

During the past two years the membership has increased by eighty, after deducting withdrawals by death, sale of sheep, or farms. An increase in percentage of new members in the past few months would indicate a much faster increase in membership in the near future.

In view of the fact that the Maine Sheep and Wool Growers' Association has grown in membership, as well as financially, each year, while hundreds of other cooperative marketing organizations have been forced to quit, I feel that the work merits the support, both morally and financially, of every one interested in one of Maine's profitable industries.

More and better sheep will make more profits, and more contented, prosperous families on Maine farms.

Respectfully submitted,

C. H. CRAWFORD,

Sheep Specialist.

REPORT OF CHIEF OF THE DIVISION OF MARKETS.

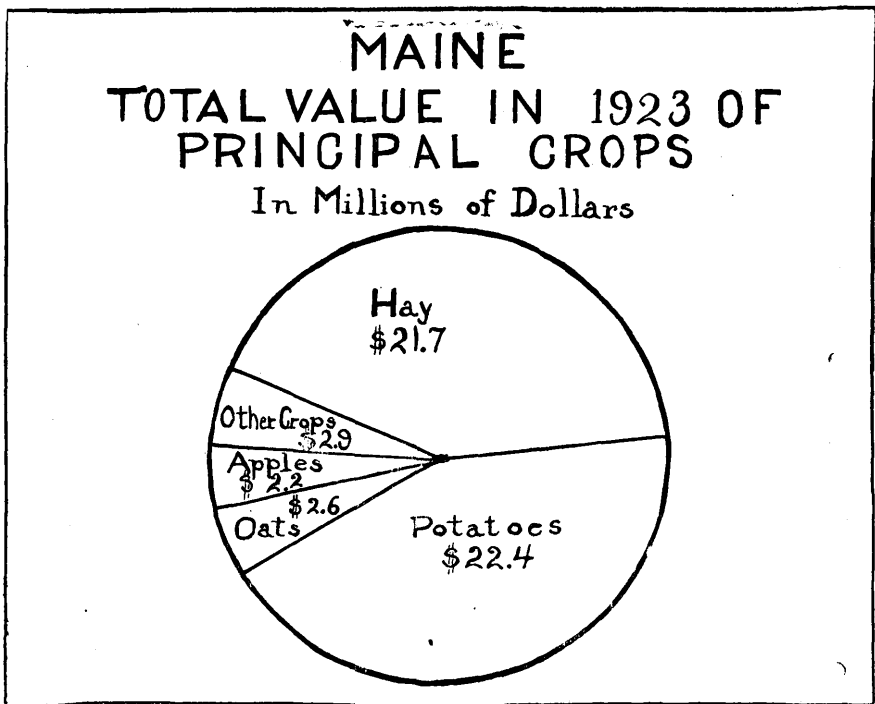
Hon. F. P. Washburn, Commissioner of Agriculture:

I herewith submit the report of the Division of Markets for the period July 1, 1922, to June 30, 1924, inclusive. During this period the regular personnel of the Division of Markets consisted of the chief and, most of the time, one assistant. Special work like shipping point inspection and demonstration work with fruit growers' associations has required extra help for short periods. In May, 1923, we were obliged to dispense with the services of Mr. J. Thomas Dionne because funds for traveling purposes had run out and it was impossible to pay field expenses. We are glad to know that Mr. Dionne was able to take up work which proved more remunerative than the salary which the Division was able to pay him. The next August with the beginning of the fall work it became necessary to employ more help and Mr. P. M. Dow was taken on for clerical work for a few months. At the same time Mr. Fred C. Sturtevant of Hebron was employed for specialized work with the fruit growers' associations. All of these men have done excellent work and Mr. Sturtevant is still with the Division.

STATISTICS.

The plan of collecting crop statistics for Maine in cooperation with the other New England States and with the Federal Bureau of Agricultural Economics is still continued on the same general lines as those adopted July 1, 1921. By this plan approximately one thousand dollars of the Division funds has been used annually for this purpose. Results have been very satisfactory, as it is believed the

statistics themselves have been much more accurate and obtained at less cost than would have been possible had the State attempted it alone. Bulletins have been issued at two-week intervals during the growing season without cost to the farmers, directly from the statistician's office at Wakefield, Mass., and at the end of each year a crop and livestock summary has been issued. The issue of December 31, 1923, is the most complete and accurate summary of livestock and crop production and value ever issued for the state of Maine.



A striking feature of this crop summary is the maps and charts showing at a glance areas of production and comparative values of different crops. Tabulations are also given for the principal Maine crops by counties. Careful study of these reveals the areas adapted to particular types of farming, as well as showing the actual crop values.

Miscellaneous statistics covering information of value only to Maine have been collected by the Division covering such subjects as the value and quantity of milk and cream handled through the various milk concerns doing business in the State. The rapidity with which the dairy industry adjusts itself may be seen in the increase in the manufacture of ice-cream. As a business this has not amounted to much until a very few years ago. At the present time eight concerns are manufacturing 1,852,801 gallons annually. Twenty years ago practically all dairy products were manufactured and sold direct to the consumer by the producer. Today 6,497 dairymen, representing 34,595 cows, are disposing of their milk directly to twenty milk concerns. Just what the future holds for the dairy industry of the State is problematical, as the over-production of fluid milk has tended to reduce the price so low as to be unprofitable for the average dairyman. This condition will tend to the elimination of the low producing cows and possibly to a more extensive manufacture of dairy by-products, such as butter, cheese and sweet cream.

A certain amount of investigational work has been done in regard to the canning of peas which is a new departure for Maine canning factories. Thus far the results at Fryeburg and Unity have been encouraging. The item of high cost of seed and difficulty with weeds where kale is especially prevalent seem to be the greatest drawback, but the smaller amount of labor as compared with hoed crops and the returns per acre largely offset the disadvantages.

COOPERATIVE ORGANIZATIONS.

The cooperative purchasing concerns doing business all over the State have practically all recovered from the bad slump of 1920 and 1921. As in all lines of business, some have fallen by the wayside. The number of these to close out, however, is no higher, if as high, as in other lines of business. The lamentable feature of this is not so much that they have gone out of business as it is that in many instances it was unnecessary. Inadequate financing in the beginning usually proved a handicap which they never over-

came. The lesson to be drawn from this is plain; that no organization work should be attempted until a careful survey shows that present means of obtaining supplies are insufficient or too costly. This survey should be followed by a careful estimate to determine if the new organization can be properly financed and sufficient volume assured to keep the overhead down and the business management efficient. Until these things are definitely determined no organization work should be attempted. It is particularly difficult at the present time for farmers to attempt organization work as the last three years of hard times have so reduced their surplus earnings that it is next to impossible for them to furnish finances for new undertakings.

Interest in cooperative marketing at the present time is keen and the organization of such work is more simple than that of a purchasing organization because a marketing organization can be easily financed. The greatest difficulty to be encountered is that, while the members' products may be used as collateral during the process of marketing, in many instances it is a real hardship for the producer to wait the necessary time for the produce to be turned into cash and the returns made on the various pools. However, it is believed that with a better understanding of the pool system of selling the members' products this difficulty will disappear and the members be able to reap financial benefits from cooperative marketing. The Maine Potato Growers' Exchange is the largest marketing organization ever undertaken in the State and has been organized and continued through the efforts of producers assisted by Aaron Shapiro without assistance from the Department of Agriculture. Its first year of actual operation has not yet closed and results will be watched with much interest.

The cooperative canning factories, both corn and blueberry, are rendering good service to their members and are becoming more firmly established each year. They have invariably adopted a conservative financial policy, making each year improvements in their factories and equipment to keep them modern and up-to-date, then laying aside a reasonable reserve, after which the members have received all the proceeds of the sales. In one instance the sweet corn

growers received $4\frac{3}{4}$ cents per lb., which is very satisfactory when the going price throughout the State last year was 4 cents for yellow sweet corn.

The advantage of several years' work in accumulating a file of by-laws, contracts and forms of organization were especially evident during the last year when many communities have sought to organize cooperative creameries, cheese factories and other marketing organizations. The Division has been able to answer all requests by working out, from the material at hand, forms which would be applicable to local conditions. The tentative form of contract and by-laws from which a final draft was made by the Maine Poultry Producers' Association, was furnished by the Division of Markets. This service is gladly given to any community in the State requesting the same.

LECTURES AND DEMONSTRATIONS.

During the period covered by this report the Chief of the Division has delivered addresses and illustrated lectures at 112 meetings attended by 5,037 people, or an average attendance at each meeting of 46 persons. Marketing subjects have been discussed in every instance and the effort has always been to make the information given apply to Maine conditions. Other members of the Division have attended and addressed practically one-third as many meetings and people.

Every year the Division has done its part toward putting on the exhibit at the Eastern States Exposition in Springfield, Mass. Each year this work becomes more and more worthwhile as the Exposition is coming to be recognized as the greatest of its kind east of the Mississippi River, and from 250,000 to 300,000 persons attend each year. There is no better way in which to sell Maine and Maine opportunities to the people at large than to reach them through an attractive exhibit. In 1922 apples were featured as the principal part of the large exhibit, while the six smaller booths were devoted to certified potatoes, pure foods, boys' and girls' clubs, dairy products, and the virgin wool blankets, suitings, yarns and ready-to-wear

garments of the Maine Sheep and Wool Growers' Association. In 1923 practically the same line of exhibits were carried out in special booths, while in the larger display potatoes were made a feature and as a direct result of this exhibit 38 cars of certified seed were sold.

Some five years ago the Department assisted in organizing the wool growers of the State into a sales agency known as the Maine Sheep and Wool Growers' Association which has prospered from the start. Each spring this Division has assisted the various locals in their bagging operations in order to demonstrate efficient methods of weighing and accounting. In 1922 this work was done at sixteen places and the present year we have helped at seventeen places. As the locals have now become quite thoroughly acquainted with the methods of pooling the wool, it should not be necessary to continue this work much longer. Any cooperative organization which cannot maintain itself and perform the necessary services at as low or a lower cost than the service has cost in former years cannot long justify its existence. Unquestionably the Maine Sheep and Wool Growers' Association has justified their effort, and will soon be able to conduct their efforts without assistance.

A careful survey was made of all the fruit growers' associations in the State during August of 1922. Mr. A. K. Gardner of the Extension Service assisted in this work and a few rather definite conclusions were reached. First, that a successful association should have a community packing house to insure a uniformly graded product. Second, the members should pool the returns on like varieties and grades in order to eliminate any possibility of a feeling that favoritism was being shown to any particular member. Third, that a contract should be used in order to safeguard the investment in necessary equipment for packing and shipping, and also that the work should be carried over a sufficiently long period to thoroughly test its methods. For several years young orchards had been coming into bearing in the vicinity of Winterport and the growers were seeking better marketing methods. Their conclusions seem to have been in line with those resulting from the survey of fruit

growers' associations and it was agreed to attempt to carry them out.

During the summer, plans were developed for operating a packing house where the fruit from the orchards could be delivered as rapidly as picked. Actual packing operations were begun the middle of September. The crew worked under the direction of a specialist from the Division of Markets, which also furnished help in establishing a simple system of bookkeeping. Each member was given a receipt for the number of barrels of loose fruit at time of delivery, which was later filled out to show the grades into which the apples were sorted. The reason for this is that each man was paid the same price for the same variety and grade of apples handled through the Association. Right here the Association set up a great argument for the production of high grade fruit by its members. In the end no orchardist likes to feel that he is not being rewarded for care in producing high quality apples.

Three thousand, eight hundred and thirty-four barrels of loose fruit were delivered to the packing house. These were graded according to the needs of the market in which they could best be disposed of. In some instances two grades of Number Ones were made with a minimum diameter in one case of $2\frac{1}{4}$ inches and in the other $2\frac{1}{2}$ inches. This greatly improved the appearance of the apples and the uniform size throughout the barrel helped to make sales.

The interesting part of it is that, including in the cost of packing all labor, liners, pulps, stencils, taxes, insurance, depreciation and miscellaneous items, the whole expense amounted to only 41 3-10 cents per barrel. Perhaps one of the striking lessons is that in regard to the number of varieties which it is profitable for any person or local association to grow, the cost of packing mounts rapidly when the crew is obliged to clear the trays several times a day in changing from one variety to another. The best day's work was done when only one variety was packed. The total number of barrels put up on this day was 125, on which the labor cost was 26 4-10 cents per barrel. Another day when the odd lots were being put up, seven varieties were handled which slowed down the crew to such an extent that only $47\frac{1}{2}$ bar-

rels were packed, making the labor cost amount to 69 5-10 cents per barrel.

These are valuable results and will be used in developing fruit growers' associations wherever the growers feel the need of such a marketing organization.

PRICE LISTS.

The acute situation in the dairy industry brought about by the price cutting on fluid milk in the Boston market has set the Maine dairymen to figuring more closely than ever their cost of production. In an effort to give them accurate information as to wholesale prices of grain and feedstuffs, arrangements have been made for a weekly telegram from the primary markets giving conditions and prices. This comes through the cooperation of the U. S. Bureau of Agricultural Economics. With this material a weekly price list is issued free to all applicants every Friday. Evidently the service is much appreciated as the mailing list already has practically 500 names which have been obtained without special effort.

STANDARDIZATION.

Under the broad provisions of Chapter 44, Public Laws of 1921, it has been possible for the Division of Markets to meet whatever demands have been made upon it for standardization work. With our eastern markets constantly being invaded by carefully graded products from the west and even from foreign countries, the need becomes more apparent each year for marketing well graded products. A shipping point inspection of potatoes was established in 1921 and was enlarged in 1922. This latter year the Federal Bureau of Agricultural Economics also cooperated and 384 car lots of potatoes were inspected. Not a large number, to be sure, when compared with the total shipped from the state; the significant part being that none of these were rejected as being below grade. This same service was started in the fall of 1923, but because the Maine Potato Growers' Exchange was just developing its sales organization and did not wish to pledge a definite number of inspections the Federal Department withdrew its support. In

view of this fact, and also that the quality of the potato crop in 1923 was the best for many years, it seemed that the expense of maintaining the service during the entire shipping season would be greater than the results would warrant. The service was discontinued and thereby nearly \$4,000 of the inspection appropriation was saved.

Further standardization work is being asked for hay and eggs. Hay has always been one of Maine's largest crops, and according to the National Hay Association grades had been classed rather low. Consequently a general prejudice has developed against Maine hay because it has been classed as No. 2, No. 3 or feeder hay. It is hoped that interest can be aroused in the new U. S. grades, as these grades divide hay in classes and then sub-divide the classes into No. 1, 2 and 3 grades. Thus our mixed hay which is early cut and properly cured is of excellent feeding quality and may easily come to be graded as No. 1 mixed hay or No. 1 mixed clover. Plans are practically completed for Mr. Sturtevant of the Division to attend the hay grading school in Washington, D. C., during the first part of August in order to be able to interpret the United States grades and issue a certificate as a licensed inspector. We hope to conduct demonstrations for interested parties next fall.

With the phenomenal success of the New Hampshire farmers in marketing their eggs, the demand for a similar organization in Maine is being felt by the poultrymen themselves. After a campaign which was endorsed by the State Chamber of Commerce and Agricultural League, the Maine Poultry Producers' Association was incorporated May 14. It will be one of the fundamentals of this organization that their eggs will be sold graded. This should tend to the production of even better quality eggs and hereafter the returns to the producers will be in proportion to the value of the product. This new organization has our best wishes for its success.

MISCELLANEOUS.

During July and August when farmers are busy and co-operative marketing work is slack, the members of the Di-

vision have helped in the field inspection work of the certified potato service. In 1923 both the first and second inspections were handled in Androscoggin, Cumberland and Oxford Counties.

At various times farms have been appraised for the Maine Farm Lands Loan Commission. Over sixty in all have been gone over. Nearly half of these were in Aroostook County.

Certified canned goods are now being put up under the supervision of the Division of Inspection. A few blueberry packers who found difficulty in selling this quality product were helped to the extent of circular letters sent to more than 1,500 wholesale and jobbing houses in the middle west.

In conclusion credit should be given to the members of the Department who have always been ready to assist in the work, as well as to the Extension Service of the University of Maine who have rendered a great deal of practical assistance in solving the marketing problems. While the U. S. Bureau of Agricultural Economics has not given us the material assistance which it formerly did, yet its relations with us have been most helpful and cordial.

Respectfully submitted,

C. M. WHITE,

Chief, Division of Markets.

Statistics of
Agricultural Societies

OFFICERS OF AGRICULTURAL SOCIETIES

NAME OF SOCIETY	PRESIDENT	P. O. ADDRESS	SECRETARY	P. O. ADDRESS	TREASURER	P. O. ADDRESS
Maine State Agricultural Society	Dr. R. N. Russell	Lewiston	J. S. Butler	Lewiston	A. W. P. Cobb	Auburn
Eastern Maine State Fair	George L. Coffin	Bangor	A. B. Peckham	Bangor	George L. Coffin	Bangor
Central Maine Fair	Ralph A. Jewell	Fairfield	Dr. P. K. Baird	Waterville	Wm. A. Knauff	Waterville
Maine State Pomological Society	N. D. Stanley	Pittsfield	E. L. White	Bowdoinham	T. E. Chase	Buckfield
Maine State Poultry Ass'n.	E. E. Philbrook	Portland	W. H. Whipple	Portland	Edna D. Smith	Portland
Androscoggin County	John Look	North Jay	Charles D. Dyke	Livermore Falls	Geo. W. Dyke	Livermore Falls
Greene Town Fair Association	W. L. Mower	Greene	Isabelle Osborne	Greene	Lewis C. Mendall	Greene
Leeds Agricultural Association	Dr. D. F. D. Russell	Leeds Center	F. A. Thomas	Leeds Center	W. B. House	Leeds Center
Androscoggin Valley Fair Ass'n.	R. A. Jordan	Buckfield	Geo. B. Barrows	Canton	C. E. Mendall	Canton
Androscoggin Poultry & Pet Stock Association	Geo. A. Rivard	Lewiston	A. A. Garelon	Auburn	I. F. Blaisdell	Auburn
Aroostook County	Edgar W. Russ	Caribou	Frank Riley	Caribou	Frank Riley	Caribou
Houlton Agricultural	Geo. H. Benn	Hodgdon	J. C. Rose	Houlton	A. E. Carter	Houlton
Northern Maine Fair Ass'n.	Nathan F. Perry	Presque Isle	O. L. Donaldson	Presque Isle	M. S. W. Dingwall	Presque Isle
Bridgton Agricultural	J. Burnett Pike	Bridgton	Fred S. Hanson	Bridgton	Howard E. Burnham	Bridgton
Cumberland County	J. W. Sturgis	Woodfords	F. E. Moulton	Cumberland Ctr.	H. C. Palmer	Gorham
Cumberland Farmers' Club	Fred L. Haskell	So. Windham	Willard Wilson	Cumberland Ctr.	Fred E. Moulton	Cumberland Ct
Freeport Poultry Ass'n.	C. I. Davis	Waterville	L. G. Cushing	Freeport	A. W. Goodwin	Freeport
New Gloucester and Danville	Fred Furbush	Auburn	Clarence L. McCann	New Gloucester	Charles H. Nelson	New Gloucester
Franklin County	Clifford F. Blanchard	Farmington	Frank E. Knowlton	Farmington	Charles H. Pierce	Farmington
North Franklin	Cony M. Hoyt	Phillips	H. M. Worthley	Phillips	F. E. Parker	Phillips
Hancock County	M. R. Hinckley	Bluehill	E. G. Williams	Bluehill	M. R. Hinckley	Bluehill
Eden Agricultural	J. L. Fogg	Ellsworth	Julian Emery	Salisbury Cove	C. F. King	Salisbury Cove
North Ellsworth	Vera C. Ellis	Ellsworth	Harold Maddocks	Ellsworth	Wm. Richardson	Ellsworth
Cochnewagan	H. H. Witherell	Monmouth	W. E. Reynolds	Monmouth	Charles H. Berry	Monmouth
Kennebec County	Ellsworth E. Peacock	Readfield	Ellsworth E. Peacock	Readfield	Fred A. Walker	Readfield
Litchfield Farmers' Club	A. H. Rathburn	Litchfield	E. M. Lapham	Litchfield	Charles E. Walker	Litchfield
South Kennebec	Leslie B. Hisler	Coopers Mills	Arthur N. Douglass	Gardiner	Jasper S. Gray	Windsorville
North Knox	W. E. Perry	Union	H. L. Grinnell	Union	M. A. Lucas	Union
Lincoln County	Geo. D. Pastorious	Newcastle	Edw. B. Denney Jr.	Damariscotta	E. R. Castner	Damariscotta
Oxford County	L. E. McIntire	East Waterford	W. O. Frothingham	South Paris	W. O. Frothingham	South Paris
North Oxford	John F. Talbot	Andover	Roger L. Thurston	Andover	Fred A. Milton	Andover
West Oxford	Chas. W. Farrington	Fryeburg	E. C. Buzzell	Fryeburg	Alvin D. Merrill	Fryeburg
Western Maine Poultry Ass'n.	C. Guy Buck	South Paris	E. P. Crockett	South Paris	Geo. W. Haskell	So. Paris
Bangor Poultry Ass'n.	Wm. H. Northup	Bangor	Wayne Russell	Bangor	Donald F. Snow	Bangor
North Penobscot	C. M. Lombard	Springfield	F. R. Averill	Prentiss	O. C. Abbott	Springfield

West Penobscot	E. M. Atkins	Dexter	E.E. Colbath	Dexter	F. O. Barker	Exeter
Sagadahoc Agric. and Horticultural	H. W. Totman	Topsham	E. C. Patten	Topsham	I. R. Morrell	Brunswick
Richmond Farmers' Club	George A. Riley	Richmond	Hazel K. Libby	Richmond	Dr. F. B. Peabody	Richmond
Somerset Central	Walter P. Ordway	Skowhegan	Geo. H. Plummer	Skowhegan	John W. Fogler	Skowhegan
Somerset County	J. F. Withee	Madison	C. Oscar Flanders	Madison	C. Oscar Flanders	Madison
East Somerset	J. A. Goodrich	Pittsfield	H. H. Coston	Pittsfield	H. H. Coston	Pittsfield
Embden	G. G. Palmer	No. Anson	A. D. Hodgdon	No. Anson	Geo. W. Moulton	No. Anson
North Anson	Arthur E. Ela	No. Anson	J. F. Tingley	No. Anson	Byron Slipp	No. Anson
Solon	A. C. Heald	Solon	Joseph Matson	Solon	John C. McCollor	Solon
Wesserunett Valley Fair Ass'n	Charles F. Dunton	Athens	Howard E. Chapman	Athens	Howard E. Chapman	Athens
Waldo and Penobscot	Frank M. Nickerson	North Jay	Fred W. Curtis	Belfast	F. M. Nickerson	North Jay
New Belfast Fair	M. S. Jellison	Belfast	H. C. Buzzell	Belfast	L. E. Thornton	Belfast
Tranquility Grange Ass'n	Parker Young	Lincolnville	Lawrence Rankin	Lincolnville	I. O. Eugley	Lincolnville
Unity Park Ass'n	Nicholas Walton	Unity	J. H. Farrell	Unity	J. H. Farrell	Unity
Cornish	William R. Copp	Cornish	Leon M. Ayer	Cornish	Samuel G. Sawyer	Cornish
Shapleigh and Acton	Lorenzo H. Abbott	Shapleigh	Fred K. Bodwell	Acton	Lawrence E. Staples	Shapleigh
York Agricultural Aid Society	John H. Gogins . . .	Biddeford	Mrs. Ida B. Carter	Biddeford	Frank L. Jellerson	Biddeford
So. Berwick Poultry Ass'n	Fred Y. MacDonald	So. Berwick	Ralph E. Foss	So. Berwick	Charles N. Harvey	So. Berwick
West Kennebunk Grange	Fred Thurston	W. Kennebunk	D. F. Grant	Kennebunk	C. W. Stone	Kennebunk

FINANCES, 1923

Name of Society	Amount received from State.	Receipts for membership.	Receipts from loans.	Entry fees for poultry.	Receipts from entry fees for trotting purses.	Receipts from all other sources	Gate receipts.	Total receipts.
Maine State Agricultural Society	\$2,500.00	940.00	18,000.00	—	5,002.75	18,360.53	30,760.00	75,563.28
Eastern Maine State Fair	2,500.00	—	—	—	1,650.00	7,775.62	17,517.05	29,442.67
Central Maine Fair	2,500.00	—	—	—	1,645.00	28,072.70	24,705.20	56,922.90
Maine State Pomological Society	1,999.97	113.00	494.90	—	—	897.00	—	3,504.87
Maine State Poultry Association	1,046.47	79.00	—	1,032.92	—	1,670.78	—	3,829.17
Androscoggin County	154.92	no report reed	—	—	—	—	—	154.92
Greene Town Fair	56.60	—	—	—	—	259.83	77.60	394.03
Leeds Agricultural Ass'n.	51.41	4.00	—	—	—	25.00	92.00	172.41
Androscoggin Valley Fair Association	261.44	57.00	—	—	667.50	1,231.65	1,633.00	3,850.59
Androscoggin Poultry and Pet Stock Ass'n.	104.69	74.00	175.00	492.94	—	—	—	846.63
Aroostook County	356.81	No report	—	—	—	—	—	356.81
Houlton Agricultural	817.53	—	—	—	40.00	3,853.90	16,336.12	21,047.55
Northern Maine Fair	1,911.31	43.00	—	—	201.15	3,712.00	29,004.80	34,872.26
Bridgton Agricultural	157.07	—	—	—	815.00	417.00	3,008.25	4,397.32
Cumberland County	701.59	300.00	9,500.00	—	3,719.00	10,358.41	9,526.50	34,105.50
Cumberland Farmers' Club	132.79	29.50	—	—	271.25	616.31	1,754.20	2,804.05
Freeport Poultry Association	346.35	16.00	100.00	596.85	—	—	—	1,059.20
New Gloucester and Danville.	231.53	10.00	—	—	572.50	1,172.14	2,376.25	4,362.42
Franklin County	1,248.03	1,239.00	273.06	—	1,200.00	2,482.34	9,617.00	16,059.44
North Franklin	91.84	450.00	325.00	—	180.00	—	768.68	1,815.52
Hancock County	167.94	—	—	—	—	240.00	4,110.59	4,518.53
Eden Agricultural	63.16	—	—	—	195.00	830.85	1,172.00	2,261.01
North Ellsworth	43.35	1.00	—	—	30.00	45.00	258.25	377.60
Cochewegan	171.07	—	—	—	—	283.50	325.90	780.47
Kennebec County	257.61	—	—	—	240.00	201.00	2,351.50	3,050.11
Litchfield Farmers' Club	51.87	—	—	—	—	466.40	—	518.27
South Kennebec	92.88	80.00	—	—	—	230.36	2,262.95	2,666.19
North Knox	238.99	—	—	—	75.50	1,215.54	4,426.33	5,956.36
Lincoln County	—	4.00	200.00	—	—	2,892.78	3,216.60	6,313.38
Oxford County	1,050.24	24.00	1,800.00	—	1,630.00	5,288.68	8,052.30	17,845.22
North Oxford	237.77	20.00	—	—	350.00	223.17	1,631.75	2,462.69

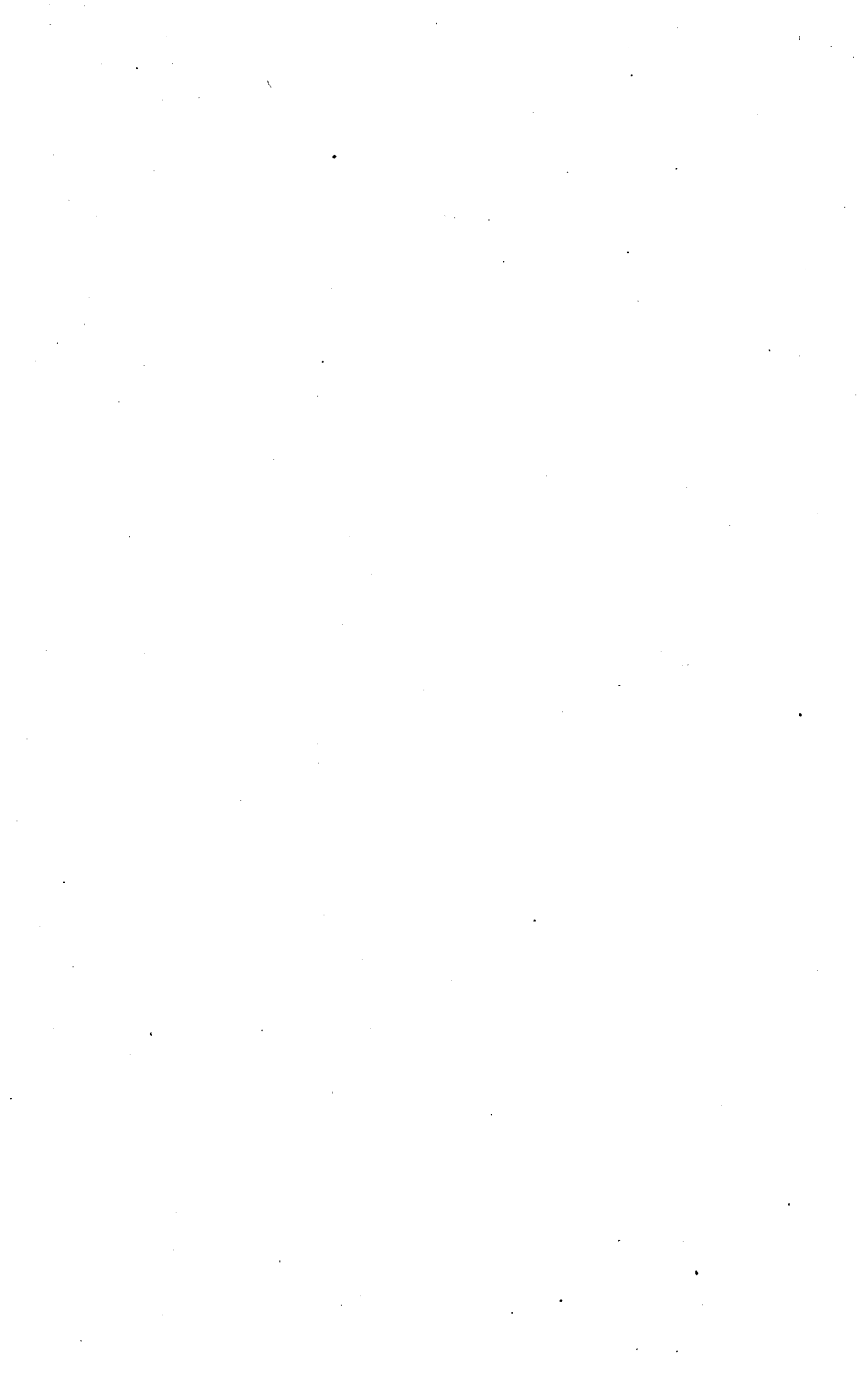
West Oxford	616.05	No report	—	—	—	—	—	4,722.53	5,338.58
Western Maine Poultry Ass'n.	269.36	6.50	—	—	651.04	—	—	—	926.90
Bangor Poultry Association	581.58	18.00	800.00	—	508.50	—	276.16	—	2,184.24
North Penobscot	92.29	—	—	—	—	560.00	300.00	2,500.00	3,452.29
West Penobscot	575.00	24.00	500.00	—	—	715.00	628.27	4,011.00	6,453.27
Sagadahoc Agricultural and Horticultural	1,085.84	50.00	—	—	—	1,964.00	6,401.12	8,411.00	17,911.96
Richmond Farmers' Club	139.79	—	—	—	—	3.50	100.00	319.55	562.84
Somerset Central	742.97	40.00	18,199.80	—	—	357.50	5,288.05	15,489.37	40,117.69
Somerset County	74.73	80.00	300.00	—	—	535.00	317.62	1,734.00	3,041.35
East Somerset	268.98	—	—	—	—	—	406.16	1,162.79	1,837.90
Embden	19.67	No report	—	—	—	—	—	—	19.67
North Anson	40.60	No report	—	—	—	—	—	—	40.60
Solon	87.04	—	—	—	—	—	174.75	—	261.79
Wesserunett Valley	266.53	60.80	—	—	—	—	455.67	1,078.51	1,861.51
Waldo and Penobscot	—	—	—	—	—	—	529.99	2,555.00	3,084.99
New Belfast	237.98	—	—	—	—	1,280.00	—	—	1,517.98
Tranquility Grange Association	40.80	—	—	—	—	—	1.00	171.25	213.05
Unity Park Association	142.01	—	—	—	—	400.00	256.25	1,500.00	2,298.26
York Agricultural Aid Society	89.83	17.00	23.90	—	—	—	393.87	318.60	843.20
Cornish	342.14	—	4,422.36	—	—	1,240.00	—	4,142.90	10,147.40
Shapleigh and Acton	—	246.00	60.00	—	—	—	263.11	—	569.11
South Berwick Poultry Ass'n.	218.00	7.00	—	—	85.00	—	27.00	3.65	340.65
West Kennebunk Grange	—	—	—	—	—	565.00	700.50	3,245.50	4,511.00
	\$25,476.42	\$4,032.80	\$55,174.02	\$3,367.25	\$26,104.65	\$109,342.02	\$226,350.47	\$449,847.63	

FINANCES, 1923—CONCLUDED.

Name of Society	Amount expended in improvements.	Amount expended in trotting purses.	Expenses during the fair.	Amount expended for purposes not named above	Total amount paid out including premiums and gratuities	Value of property belonging to the society.	Amount of liabilities
Maine State Agricultural Society	1,051.00	11,947.50	39,610.73	15,000.00	75,428.98	118,254.18	15,000.00
Eastern Maine State Fair	—	6,840.00	5,193.01	44,818.77	62,897.53	48,019.07	25,393.24
Central Maine Fair	1,840.15	6,606.98	10,216.54	2,168.78	27,760.45	4,000.00	16,065.70
Maine State Pomological Society	—	—	—	1,751.27	3,122.27	—	—
Maine State Poultry Association	—	—	1,211.56	71.85	3,659.24	1,339.20	1,177.16
Androscoggin County	—	No report rec'd	—	—	—	—	—
Greene Town Fair	—	—	69.62	—	266.12	—	—
Leeds Agricultural Ass'n	—	—	41.15	129.49	349.63	—	—
Androscoggin Valley Fair Association	728.85	1,340.00	758.40	603.39	4,344.14	5,000.00	3,740.00
Androscoggin Poultry and Pet Stock Ass'n	5.00	—	309.59	494.06	1,010.85	285.00	448.53
Aroostook County	—	No report rec'd	—	—	1,012.00	—	—
Houlton Agricultural	397.77	6,494.00	2,433.88	8,752.24	21,139.84	27,751.76	7,200.00
Northern Maine Fair	1,035.50	8,132.50	8,010.94	9,923.59	34,217.88	75,000.00	19,200.00
Bridgton Agricultural	400.00	3,500.00	200.00	—	4,744.00	5,000.00	2,000.00
Cumberland County	6,734.11	9,850.00	5,222.47	11,667.55	35,649.88	40,000.00	9,500.00
Cumberland Farmers' Club	673.64	551.50	444.12	152.80	2,132.82	7,000.00	—
Freeport Poultry Ass'n	—	—	212.73	—	640.73	750.00	100.00
New Gloucester & Danville	1,126.39	1,287.50	880.81	29.88	4,029.43	3,500.00	—
Franklin County	6,500.00	3,200.00	9,149.16	278.19	23,122.80	40,000.00	—
North Franklin	300.00	625.00	660.85	24.96	1,922.82	2,500.00	1,950.00
Hancock County	626.07	1,057.50	261.05	1,882.78	4,380.65	2,000.00	—
Eden Agricultural	100.00	585.00	85.50	1,035.00	2,001.05	2,500.00	425.00
North Ellsworth	80.00	150.00	90.00	27.00	457.75	2,500.00	60.00
Cochewagan	40.24	—	61.68	70.00	676.42	—	—
Kennebec County	200.00	900.00	381.47	—	2,099.47	1,000.00	—
Litchfield Farmers' Club	—	—	—	—	203.85	650.00	—
South Kennebec	430.17	637.50	461.50	710.31	2,692.13	1,800.00	—
North Knox	1,650.00	955.00	1,582.50	797.73	5,783.28	3,500.00	—
Lincoln County	785.75	1,030.00	939.11	2,437.12	5,608.38	—	221.40
Oxford County	4,038.75	4,175.00	2,795.40	2,784.72	17,104.22	30,000.00	2,600.00
North Oxford	50.00	1,000.00	517.67	349.68	2,526.85	2,500.00	—

West Oxford	—	No report rec'd	—	—	2,097.90	—	—
Western Maine Poultry Ass'n	54.50	—	210.41	39.71	920.95	500.00	122.68
Bangor Poultry Ass'n	—	—	302.69	—	1,518.69	1,000.00	800.00
North Penobscot	400.00	890.00	1,822.00	—	3,318.00	3,000.00	—
West Penobscot	675.19	1,800.00	509.00	5,668.74	10,064.59	5,500.00	4,627.84
Sagadahoc Agricultural and Horticultural	600.00	3,850.00	2,355.00	8,503.29	18,515.58	10,000.00	—
Richmond Farmers' Club	33.00	—	49.00	20.83	562.43	1,100.00	200.00
Somerset Central	—	9,283.35	—	18,237.50	29,390.26	—	17,200.00
Somerset County	300.00	1,450.00	904.57	73.25	2,945.32	2,500.00	600.00
East Somerset	150.00	560.00	547.86	543.05	2,695.16	3,000.00	2,200.00
Embden	—	No report rec'd	—	—	73.50	—	—
North Anson	—	No report rec'd	—	—	—	—	—
Solon	—	—	52.34	—	359.09	—	—
Wesserunnett Valley	546.06	—	321.21	420.00	2,368.62	1,000.00	525.00
Waldo and Penobscot	350.00	912.00	625.00	413.69	3,029.44	3,500.00	545.25
New Belfast	200.00	—	1,870.00	1,280.00	4,244.69	5,000.00	402.69
Tranquility Grange Ass'n	65.00	—	28.39	—	187.49	—	—
Unity Park Association	205.00	1,050.00	350.00	—	2,057.75	2,500.00	—
Agricultural Aid Society	119.66	—	174.84	—	528.15	800.00	—
Cornish	2,700.00	2,800.00	1,520.30	3,127.10	10,958.40	10,000.00	3,700.00
Shapleigh and Acton	—	—	46.00	60.00	399.25	2,000.00	—
South Berwick Poultry Ass'n	—	—	151.47	38.82	306.49	50.00	220.20
West Kennebunk Grange	473.00	1,330.00	1,363.85	—	3,289.85	4,500.00	1,614.11
	\$35,664.80	\$94,790.33	\$105,005.37	\$144,387.14	\$450,817.06	\$480,799.21	\$137,838.80

COMMISSIONER OF AGRICULTURE



ANNUAL REPORT

OF THE

State Pomological Society

1922

TWENTY-FIRST REPORT

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Vice-Presidents

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 W. G. CONANT Hebron

Secretary

E. L. WHITE Bowdoinham

Treasurer

T. E. CHASE Buckfield

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

LYMAN K. LEE Dover-Foxcroft
 G. A. YEATON Augusta
 E. W. DOLLOFF Standish

TRUSTEES FOR 1922

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—F. H. Taylor	Winthrop
Knox County—Frank H. Lenfest	Union
Lincoln County—W. C. Ford	Whitefield
Oxford County—W. H. Conant	Buckfield
Penobscot County—Earnest 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

LIFE MEMBERS

Allen, W. H.	Buckfield	Hayes, William	Gardiner
Andrews, Charles E.	Auburn	Heald, U. H.	Paris
Atherton, Wm. P.	Hallowell	Herrick, A. A.	Norway
Atkins, Charles G.	Bucksport	Higgins, Forrest L.	Standish
Averill, David C.	Temple	Hinds, W. C.	Winthrop
Barrows Greenhouse Co.	Gorham	Hitchings, E. F.	Orono
Bearce, Harry W.	Hebron	Hoyt, C. E.	New Portland
Bickford, Lewis I.	Dixmont Center	Hoyt, Mrs. Frances	Winthrop
Bisbee, George E.	Auburn	Jones, Elwyn	Dryden
Bisbee, Stanley	Rumford Falls	Jackson, F. A.	Winthrop
Blaisdell, A. L.	Winterport	Jewett, Glen A.	Head Tide
Blossom, O. E.	Turner Center	Keene, Charles S.	Turner
Bowman, H. G.	Hebron	Keyser, Howard L.	Greene
Bradbury, Mrs. Bert.	Buxton Center	Lang, Ivan E.	Augusta
Briggs, John	Turner	Lapham, E. A.	Pittston
Brown, F. Howard.	Marlboro, Mass.	Leavitt, L. C., 322 West St.,	Biddeford
Brunberg, A. E.	Camden	Lee, Lyman K.	Foxcroft
Burk, O. C.	Hebron	Lincoln, E. L.	Wayne
Burleigh, Miss Clara M.	Vassalboro	Litchfield, J. H.	Auburn
Butler, Charles Henry	Wiscasset	Littlefield, Harry W.	Brooks
Butler, Charles M.	Wiscasset	Lombard, Thurston M.	Auburn
Butler, Alonzo	Union	Lord, J. Merrill	Kezar Falls
Butman, J. W.	Readfield	Luce, Willis A.	Mabton, Wash.
Chadbourne, C. L.	North Bridgton	Macauley, T. B.	Montreal, Can.
Chandler, Mrs. Lucy A.	Freeport	Martin, John J., 270 Center St.,	Bangor
Chase, Henry M.		McAllister, Zaccheus	West Lovell
	103 Federal St., Portland	McCabe, George L.	North Bangor
Chase, Homer N.	Auburn	McLaughlin, Mrs. Edna G.	Exeter
Chase, Thomas E.	Buckfield	McLaughlin, Henry	Bangor
Clement, D. S.	Winthrop	Merrill, H. H.	Hebron
Clements, C. C.	Winterport	Merrill, Oliver F.	Gardiner
Coant, A. A.	Hebron	Merrill, Rupert B.	Gardiner
Coant, E. E.	Hebron	Millspaugh, L. H.	Winthrop
Coant, George I.	Hebron	Minot, Clarence M.,	
Coant, H. L.	Hebron Sta.		426 Summer St., So. Portland
Coant, W. H.	Buckfield	Mitchell, Frederick H.	Turner
Coant, W. G.	Hebron	Mitchell & Co.,	Waterville
Corbett, Herman	Farmington	Moody, Charles H.	Turner
Cottle, A. S.	R. 37, Waterville	Moody, J. F.	Hebron
Crowell, John H.	Farmington	Moore, William G.	Monmouth
Cummings, Marion L.	Hebron	Moor, F. A.	Waterville
Dana, Woodbury S.	Westbrook	Morse, F. H.	Waterford
Dawes, S. H.	Harrison	Morse, W. J.	Orono
Dearborn, Hall C., Hampden Highlands		Morse, W. M.	Waterford
DeCoster, Virgil P.	Buckfield	Mosher, C. M.	Wilton
Dennison, Mrs. Cora M.	Harrison	Nason, E. A.	Mechanic Falls
DeRocher, Peter	Bradentown, Fla.	Newell, G. E.	Turner
Dirwanger, Joseph A.	Portland	Page, E. E.	East Corinth
Dodge, Mrs. Lucy T.	Orono	Page, F. W.	Augusta
Dolloff, E. W.	Standish	Palmer, George L.	Kent's Hill
Dolloff, Harold W.	Sebago Lake	Parsons, Howard G.	Turner Center
Douglass, C. S.	Douglass Hill	Patten, Mrs. E. C.	Topsham
Dunham, W. W.	North Paris	Pingree, Arthur E.	Wiscasset
Emerson, Charles L.	South Turner	Prince, Edward M.	W. Farmington
Emery, Ralph B.	Springvale	Pope, Charles S.	Manchester
Farnsworth, B. B.	Portland	Pulsifer, D. W.	Poland
Farrington, Mrs. G. H.	Brewer	Ramsdell, E. H.	Ripley
Felch, Charles E.	Limerick	Rich, N. H.	Charleston
Fish, Mrs. Benjamin	Winterport	Richards, John T.	Gardiner
Flint, John M.	West Baldwin	Richardson, Herbert A.,	
French, H. C.	Rumford Center		82 Best St., Woodfords
Gardiner, Robert H.	Gardiner	Ricker, A. S.	Turner
George, C. H.	Hebron	Ricker, Fred P.	Turner
Goddard, Lewis C.	Woodfords	Roak, George M.	Auburn
Goding, M. T.,		Robinson, W. C.	North Anson
	50 St. Lawrence St., Portland	Rogers, Mrs. Jeanette, North Newburg	
Graves, Mrs. Albert M.,	Bowdoinham	Sawyer, Andrew S.	Cape Elizabeth
Graves, Grace A.	Augusta	Sawyer, Charles F.	Hebron
Grover, Franklin D.	Bean	Saunders, Ernest	Lewiston
Gulley, Alfred G.	Storrs, Conn.	Seavey, Mrs. G. M.	Auburn
Gurney, F. E.	Hebron	Sewall, W. F.	Bowdoinham
Hackett, E. C.	West Gloucester	Skillings, C. W.	North Auburn
Hall, Mrs. H. A.	Brewer	Smith, Frederick O.	New Vineyard
Haynes, R. H.	Ellsworth Falls	Smith, V. N.	Buckfield
Hardy, E. E.	Farmington	Stanley, H. O.	Winthrop
Hardy, Walter M.	Brewer	Stanley, N. D.	Pittsfield

MAINE STATE POMOLOGICAL SOCIETY.

LEWISTON, MAINE, NOVEMBER 14-16, 1922.

Annual Meeting held in connection with the Annual Meetings of the Maine Dairymen's Association and the Maine Seed Improvement Association, and the Boys' and Girls' Clubs.

Annual Business Meeting.

November 15, 1922.

Meeting called to order by President Robinson.

The President read his Annual Address.

To the Members of the Pomological Society of Maine:

Greeting:—

Although I see I am on the program for an address, I am not going to make one, but simply give you a word of greeting. I think a word of consolation would not be amiss also to many of you whom Dame Nature has used rather roughly this season.

A lady, who came to Maine a few years ago to live, came to me in great distress. She wanted some poppy seeds and couldn't find any. I gave her some and in the fall she appeared all smiles, and said: "Mr. Robinson, those poppy seeds you gave me were wonderful. I didn't have a very good place to plant them, nor did they get much care, but in spite of all the vicissitudes to which they were subjected, they were *grand*." The apple crop of Maine has had a good many vicissitudes this year, and I am afraid has not fared as well as my friend's poppies. The early blight struck many blossoms, then the wet June started every fungus spore

heavenward to catch on to the young apples, and every time a man dusted or sprayed down came the rain to wash it off. Then came the hail, and it seemed to hunt for the good apple sections; and last, but not least, a killing frost that caught so many of the orchardists with their best fruit still on the trees.

Every other State in the Union seemed to have an abundant crop and flooded the eastern market with cheap fruit, so that a Maine apple in Boston hardly paid for the price of the package. We thought we had some encouragement from the lowered freight rate for farm produce; but a clever manipulation of affairs placed apples in a higher class than in previous years and obtained for the railroad companies an extra one and a half cents per hundred. We have a ray of hope, however, in the thought that possibly next year will be our "big" year in Maine, and the "off" year in the other States as it was last year.

One great problem with the orchardist today is the question of dusting and spraying, which to do, and what to use. One year we are advised to use lime sulphur to save the fruit, and the next year it is discovered that that treatment was all wrong; you must use something else,—that lime sulphur is a great detriment to progress, and that bordeaux is the only thing. And after one has read over the list of some twenty different mixtures of dust, he feels a little confused. A farmer who had laryngitis and could not call his hogs to feed rapped on the fence with his cane at feeding time and the hogs learned the call and came for their feed. However, a woodpecker got into the orchard, and soon the hogs were running themselves to death to find their feed. When it comes to selecting a dust that will meet our needs it is pretty hard to tell just which to select, not being a chemist, and the average person is in danger of going either "bug house" or "broke" before he finds the proper mixture for his particular troubles. Some Moses may perhaps appear with something not so complicated and more efficient, and the dust and spray manufacturers will be out of business in that case.

The farmers are subjected to a heavy burden in taxes. The principal part of these go for schools and roads, and in

too many cases but small benefit is ours from the money which goes into our roads. There are eighteen thousand miles of roads in this State which are still almost as nature left them, with the exception that the grass is worn. Last summer while on a tour of the State with our summer meetings, I asked in one community why so many Ben Davis had been planted, and one man said, "Because they will stand the 'racket'." And I could well understand after traveling over those roads what the "racket" meant. We could remedy some of these road difficulties ourselves on our third class roads by a little community spirit. If each farmer would give a few days, when not busy with his crops, and take out some stones and fill up a few ruts, he would not miss the time in the end, and his taxes and road would both benefit.

The abandoned farm is nothing to be wondered at when one considers the condition of the roads past so many of them, and the loneliness of so many of these places. I sometimes have thought too, that the summer boarder might be more of a factor than we realize in getting our people to leave their farms. The farmer or his children follow them to the city and find out how easily they make their money, and never come back to the loneliness, and oftentimes to the drudgery of a little "hillside" farm up in Maine. Too many of our farmers try to plough and harrow these hillsides which are so covered with rocks that nothing can be possibly raised by those methods but "a disturbance," and ignore the fact that nearly every rocky hillside in Maine is natural apple land. I think a liberal education among the farmers in Maine in orcharding would do much to stop the many who yearly get discouraged trying to raise crops where Nature never intended a plough should be used, and who give it up as a bad job and go to the cities and towns to earn their livings.

No matter what we raise, whether it be potatoes, poultry or apples, we have no voice at all in the price it shall be sold for. We have to take what we are given. I do feel encouraged, however, over the fact that people seem to be learning every year that a sprayed apple will keep, and an apple from an uncared for orchard will not keep as long, and in most cases has a worm in it. A great many people

think that an apple is an apple, and that it is not much good unless cooked. This is not to be wondered at when we realize that the markets are full of western apples which look large and red, but are like pumpkin to eat raw. One of our big jobs, if we are to be successful in disposing of our apples at the price which they are really worth, is to help the people to see the difference between cooking apples and eating apples, and to educate them so they will demand a Maine Spy or a Maine McIntosh Red, or some of the other fine varieties which we raise, and not be willing to take any substitute because it is as big as a pumpkin and wrapped in paper, and costs seven cents instead of three or four. Our big job is to convince the people of what we are already sure ourselves, that the *best* apples come from Maine.

E. L. White presented his report as Secretary.

During the past year there have been two resignations from the Executive Committee.

Mr. W. C. Robinson resigned in December to take up the work of President. Mr. Lyman K. Lee was elected to fill the vacancy.

Mr. F. H. Dudley resigned and Mr. George A. Yeaton was elected in his place.

There have been two meetings of the Executive Committee. The first was held in Portland on December 30, at the Falmouth Hotel. The work of the following year was gone over. It was voted to send Mr. Dudley to Boston to represent the Society at a conference of New England Societies.

The second meeting was held in Augusta, June 24. Plans were made for the field meetings in August, also for the Annual Meeting in November.

Three field meetings were held this year: the first at Mr. Leon Whitman's orchards in Hebron; the second at the Oaklands, Mr. Robert H. Gardiner's home, in Gardiner; the third at the Grange Hall in Union. The attendance at these meetings averaged more than one hundred. These meetings are proving more and more helpful to the fruit growers. By holding field meetings in the growers' orchards, topics of interest and helpfulness to the orchardists are discussed.

During the year the Society has met with a great loss in

the death of Ex-President John W. True of New Gloucester. Mr. True was a man of sterling character and always had the interest of agriculture at heart. He was respected by all and his presence at our meetings will be greatly missed.

During the coming year every farmer must bear in mind and always remember that no one else but the farmers is going to fight the farmers' battles and solve the problems of the farm.

Voted that the report of the Secretary be accepted.

T. E. Chase presented his report as Treasurer.

REPORT OF THE TREASURER OF POMOLOGICAL SOCIETY FOR YEAR 1922.

To the Commissioner of Agriculture:

Annual Report of the Treasurer of the Pomological Society for the year 1922.

RECEIPTS.

1922.	Working Funds.	
Feb. 1.	Cash on hand (as shown in last report)	\$57 56
Feb. 15.	Rec'd from State Treasurer	1,418 84
Feb. 21.	" " Bangor Chamber of Commerce	500 00
Mar. 13.	" " Apples Sold	8 00
Mar. 13.	" " 1921 Annual Membership Dues	21 00
July 7.	" " State Treasurer	580 57
July 7.	" " Interest on Bank Stock	16 00
Nov. 18.	" " Two Life Memberships	20 00
Nov. 21.	" " Lewiston Chamber of Commerce	500 00
Dec. 2.	" " One year's Interest on Bonds	65 00
Dec. 14.	" " One Life Membership	10 00
Dec. 26.	" " Proceeds of Loan (note) at Bank	494 90
Dec. 29.	" " 1922 Annual Membership Dues	25 00
Dec. 29.	" " One Life Membership Fee	10 00
Total		\$3,726 87

Permanent Fund Invested as follows:

Four Shares Farmington National Bank Stock	400 00	
Two \$500 Bonds Stockton Springs Water Company	970 00	
One Liberty Bond	1,000 00	
On deposit in Savings Bank	300 00	
Due for transfer from working funds	40 00	
Total		\$2,710 00

DISBURSEMENTS.

Order No.	Paid to	
46	M. C. Railroad, freight	\$15 15
47	Daniel P. Kennedy, labor	4 00
48	E. L. White, salary to Jan. 1, 1922	75 00
49	E. L. White, expenses to Jan. 1, 1922	69 44
50	Banquet tickets	7 25
53	F. E. Morse, carpenter work at Bangor annual meeting.....	229 42
54	A. Kelsall, speaker	34 15
55	A. C. Macomber, executive committee exp.	20 52
56	E. W. Dolloff, executive committee exp.	16 82
57	W. C. Robinson, president's expenses	25 25
58	L. B. Raynes, stenography	31 00
59	F. H. Dudley, expenses to Boston conference	20 84
60	A. K. Gardner, judge, annual meeting	25 00
63	Lyman K. Lee, apples	8 17
64	J. P. Hutchinson & Co., treasurer's bond	5 00
65	C. M. White, expenses to Boston conference	12 22
66	T. E. Chase, salary and expenses to Jan 1, 1922	13 50
67	E. W. Dolloff, exec. committee exp.	10 49
68	T. E. Chase, exec. committee exp.	8 53
69	National Shoe & Leather Bank, note and interest	504 60
70	N. D. Stanley, exec. committee exp.	25 34
71	Mrs. N. D. Stanley, clerical work	26 00
72	Lyman K. Lee, exec. committee exp.	11 70
73	W. C. Robinson, expenses	15 95
74	W. H. Conant, speaker at Orono	6 15
75	H. W. Wooster, speaker at Orono	2 69
76	N. D. Stanley, exec. committee exp.	6 47
77	G. A. Yeaton, speaker at Orono	5 73
78	E. L. White, six months' salary	75 00
79	E. L. White, six months' expenses	26 29
80	W. C. Robinson, expenses	16 46
81	A. C. Macomber, exec. committee exp.	11 65
82	E. L. White, expenses	8 30
83	W. C. Robinson, expenses	44 50
84	Portland Chamber of Commerce, dues	25 00
84-A	W. H. Conant, speaker, field meetings.....	35 89
85	Mechanics' Savings Bank, transfer of permanent fund.....	30 00
85-A	A. K. White, envelopes	10 96
86	A. K. Gardner, speaker field meetings	8 98
87	W. C. Robinson, expenses field meetings	12 20
88	H. P. Sweetser, speaker field meetings	15 34
89	Bastian Bros. Co., badges Lewiston annual show	33 33
90	Lewiston Journal, printing	17 95
91	W. C. Robinson, expenses	14 27
92	A. K. Gardner, judge Lewiston annual meeting	34 80
93	H. P. Sweetser, judge Lewiston annual meeting	40 62
94	H. H. Sewell, trucking	7 00
95	E. L. White, six months' salary	75 00
96	E. L. White, six months' expenses	43 60
61	A. L. T. Cummings, Federation dues	6 00
62	H. P. Sweetser, judge Bangor annual meeting	26 50
97	E. L. White, paid for banquet tickets	5 40
98	F. C. Sears, speaker Lewiston annual meeting	49 14
99	H. F. Frost, carpenter work	220 29
100	T. E. Chase, expenses	14 05
101	E. F. Hitchings, judge, annual meeting	34 56

102	The New Dewitt Hotel, officers, speakers' exp.	187 95
103	Merrill & Webber Co., printing premium lists	135 90
104	B. A. Hutchinson, postage	11 04
105	Premiums	505 75
106	Premiums on boxes and barrels	483 00
107	L. B. Raynes, stenography	36 60
108	G. A. Yeaton, expenses as judge	16 51
109	E. W. Dolloff, exec. committee exp.	5 78
110	Geo. F. Potter, speaker field meetings	68 58
112	T. E. Chase, six months' salary and expenses	14 00
111	National Shoe & Leather Bank, rent of deposit box.....	3 00
113	T. E. Chase, six months' salary	12 50
114	T. E. Chase, expenses	10 20
115	A. L. T. Cummings, for Good Roads Campaign	50 00
		\$3,720 27
	Cash on hand Jan. 1st, 1923	6 60
	Total	\$3,726 87

Voted, that the report of the Treasurer be accepted.

Mr. W. H. Conant, as the representative of the Pomological Society on the Council, gave the report of the Experiment Station Council, and the report was accepted.

HORTICULTURAL WORK OF THE STATION FOR 1922.

1. Cross and Self-Sterility in the Apple.

A summary of three years' work permits the following conclusions:

For practical purposes all commercial varieties of apples grown in Maine are self-sterile and must be pollinated with pollen from compatible varieties to set fruit.

Of six of the leading varieties grown in Maine,—Ben Davis, Russet, Greening, Baldwin, McIntosh and Spy—all combinations are inter-fertile except Greening and also Baldwin as the pollen parent. McIntosh and Spy are an especially compatible combination although Spy is rather late in blooming.

Most horticulturists have considered honey bees necessary for cross pollination work but in 1921 when the weather was cold and windy practically no honey bees visited our Ben Davis orchard. Bumble bees were able to pollinate the large block of self-sterile trees so that an unusually good

crop was set. Local conditions are probably very favorable for bumble bees because of pastures and wood lots near most orchards. However, honey bees may be necessary under certain conditions and do insure adequate pollination.

A relatively few pollen trees can provide pollen for many self-sterile trees. In 1914 there were less than 100 trees within half a mile of the Ben Davis orchard whose pollen was fertile with the Bens. And yet these few trees and those at greater distances provided pollen for over 1,500 self-sterile trees. It is probable that early blooming varieties including natural trees are especially valuable pollenizers as the bees visit these first and then go on to the larger blocks of commercial varieties. Although a few trees may provide sufficient pollen it is advisable to plant two or three compatible varieties together but these need not be planted in alternate rows or in blocks too small for efficient harvesting. If only a single variety is desired, the addition of a fertile early blooming tree per acre, together with adjacent natural trees usually found in New England, would probably provide sufficient pollen. The Red Astrachan pollen is especially fertile with McIntosh but is of little value with Spy.

VARIATION IN YIELD OF APPLE TREES.

Much variation is found in varieties of apple trees and at Highmoor almost a third of our Ben Davis trees are so unproductive that they are kept at a loss even in the most favorable years. The differences in yield are due to soil differences, and probably to root stocks, but there is little evidence that differences in yield are due to bud variation. However, to get fruit of the proper type and to avoid the possibility of disease scions and bud, wood should be selected only from large, vigorous, healthy trees. Unproductive trees due to poor root stocks can only be eliminated by the selection of large, vigorous root stocks. If unable to graft the trees, the next best thing is to get the best grade of nursery stock and preferably one-year stock as it takes a vigorous growing tree to make a number 1 whip in one year. Trees' unproduction due to poor soil can only be remedied by fer-

tilizers, cover crops or cultivation and it may not be profitable to increase the yields by such methods. In general, however, sodium nitrate applied after the leaves come out in the spring seems to be the most satisfactory method of stimulating a tree into producing good crops.

STOCK AND SCION ORCHARD.

There seems to be little difference in size of trees grafted on French crab roots as compared with Tolman Sweet roots, although the trees grafted on the latter are more uniform. Of much importance, however, is the fact that small trees when set in the orchard remained small after six years' growth and the large trees set were the large trees after six years in the orchard. The conclusion is to buy only vigorous, large, first grade nursery stock and cull out any weak trees even in the orchard. If a tree doesn't grow well and there is no apparent reason for it, dig it up even if it is several years old and set a new vigorous tree. A runt will usually remain a runt and will never be profitable.

ROOT STOCK EXPERIMENTS.

In 1922, two thousand French Crab seedlings were bought. These were measured carefully and then budded with McIntosh, Spy, Delicious and Ben Davis buds obtained from leading horticulturists in the State. In a few years we can tell if large root stocks produce large nursery stock. If so, it would pay nurserymen to cull out all small seedlings.

BUD VARIATION.

In the root stock experiment, buds from high and low yielding trees were obtained for each variety and from one hundred to two hundred of each budded on the seedling stock. This experiment will not only show the value of large and small root stocks but will test out the value of selecting buds from high yielding trees. Several years will be necessary for conclusive results.

The President appointed as a Committee on Resolutions the following gentlemen: E. F. Hitchings, George A. Yeaton, H. P. Sweetser.

The President appointed the following gentlemen as a committee to receive, sort and count ballots: Henry F. Butler of Wiscasset, H. P. Sweetser of Orono and Will Sinclair of Monmouth.

ELECTION OF OFFICERS FOR ENSUING YEAR.

The following officers were elected:

President: William C. Robinson of North Anson.

First Vice-President: N. D. Stanley of Pittsfield.

Second Vice-President: W. G. Conant of Hebron.

Secretary: E. L. White of Bowdoinham.

Treasurer: T. E. Chase of Buckfield.

Member of Executive Committee for one year: Lyman K. Lee of Foxcroft.

Member of Executive Committee for two years: George A. Yeaton of Augusta.

Member of Executive Committee for three years: E. W. Dolloff of Standish.

Member of Experiment Station Council: Wilson H. Conant of Buckfield.

State Vice-President of American Pomological Society: George A. Yeaton of Augusta.

Vice-President of New England Fruit Show: Frank P. Washburn of Augusta.

Three delegates to the Federation of Agricultural Associations of this State: W. C. Robinson, W. H. Conant, E. L. White.

The PRESIDENT: The next business on the program is unfinished business.

The SECRETARY: I have nothing on my table unless the matter of the death of John W. True be taken up and referred to the Committee on Resolutions.

The PRESIDENT: Dr. Twitchell, may we hear from you?

Dr. TWITCHELL: John True was one of my old friends. I have known him and associated with him more or less

intimately for the last forty years; so I knew his worth, his sterling worth, and his labors in the Pomological Society. During the early days of my acquaintance with the Society he was very active. He was one of the leaders—at one time he was president of the Society—and was always in attendance; a kind, unobtrusive man, a faithful worker, always seeking to get at the heart of things and to know how he could best accomplish the desired ends. Such men are rare, because he formed his conclusions out of his experience, and I think it is well that the Society should pass upon its record a resolution to bear testimony to the service which such men render.

On a suggestion made by the Secretary a vote was taken that the matter of the death of John W. True be referred to the Committee on Resolutions, and that Committee asked Dr. Twitchell to prepare a resolution.

A verbal report was given by Mr. George A. Yeaton, as State Vice-President of the American Pomological Society, which report was accepted.

I will say that I attended one of the meetings this year, and while the attendance was small, yet the interest manifested was very good indeed. The chief theme was to do away with so many varieties of apples and confine ourselves to growing a few of the commercial sorts that were best adapted to the localities where the orchards were located. And the word that they wished me to bring to the Maine Pomological Society was that we adopt that as our motto: Grow fewer varieties and better quality.

An invitation was given by Elwin H. Jones of Wilton, Franklin County, to the Society to hold a field meeting at his orchards.

Mr. W. H. CONANT: Mr. President, it seems to me we ought to inaugurate some sort of a membership campaign. We are interesting only a very small number. We should arrange somehow to try to interest a larger number of fruit growers through the State. There surely ought to be some way to get at it. I wish we might increase our membership. I believe we could do a great deal more good in the work we are doing—I believe that there are a great many fruit growers who, if they knew just what the Pomological

Society was doing for the fruit growers, would take more interest in it. Now I have no suggestions to make as to how this matter should be taken up, but it is almost a pity, it seems to me, that we could not make more efforts along some line to interest more of our fruit growers in the activities of the Pomological Society. I simply speak of it, hoping somebody else will have some light on the subject.

The PRESIDENT: Mr. Conant, I make a suggestion that everybody try to get another member, the same as they do in the church, when one is converted he tries to get another one. Let every one of our three hundred members—we have something like that—make a point to try and get some other man interested. Now Brother Butler, here, and I have a man on the string and we are going to catch him.

Mr. Sweetser offered the report of the Committee on Resolutions, which was accepted.

The following resolutions were adopted:

Resolved: That, as years pass, the old time workers who labored faithfully to hold firmly the standard of service by this Society are dropping out and recognition of their devotion is but the privilege of those now active;

Resolved: That in the passing of John W. True, New Gloucester, our agricultural industry, and fruit interests in particular, has lost one of its most faithful workers, and this Society would hereby testify to his loyalty to this Society, his devotion to fruit growing and the noble example of true manhood which must be an inspiration to all co-workers.

Resolved: That we endorse the efforts of the Maine Federation of Agricultural Associations to secure an equitable share of the State Highway funds for our rural roads.

Mr. Sweetser then made the following statement: Another matter which we felt was not wise to take definite action on but which we would like to present for action concerns the division of this section of the country into some organization which will assist in cooperating with the American Pomological Society. It is necessary, perhaps, that we present very briefly the situation. The American

Pomological Society holds an annual meeting and that annual meeting is held almost always in the Central States. Occasionally they may hold a meeting in Boston, but it has been a long time now since the meeting has been held near enough so that Maine growers could attend or be sufficiently enthused to send exhibits. As sections of Canada are represented, and because we find the whole West and the whole East equally interested, the meetings have been centralized. It is difficult under these conditions for Maine to be properly represented. It is probably just as difficult for other New England States to be properly represented at that American Pomological Society meeting. Our interests are not sufficiently large so that the action of the American Pomological Society can help us as well as some local organization could handle the situation. It is proposed by the American Pomological Society to ask the different States to consider this matter. They have not yet arrived at the point of asking in a definite way. That was taken up two years ago, last year and again this year, and they feel that the organizations perhaps are not strong enough to warrant the asking of districting of all the sections. Some of us believe, however, that the New England section, or the Eastern section, or whatever it may be called, is ready to organize, and we see no reason why this territory should not have an organization which could be called some name suitable to cover the district. It might take in sections of Canada. It might take in portions of New York State. It does not necessarily matter now how that district should be geographically bounded. But we do believe that there is a possibility for a committee to proceed at once toward some action along this line. I have been informed through sources which are fairly authentic that it is likely that the New England Fruit Show will be discontinued. If such is the case, next year would be just the year for us to have something definite to act upon in this organization, so that we can have a show which would replace the New England, which might be considered a District Show or a Regional show, taking the interests of the region, including some of that territory which I have mentioned. Our suggestion is that a committee be appointed at this time to consider this

matter and report to the Executive Committee, if there is need, or directly to the Society next year.

It was voted that a committee of three be appointed by the Chair to carry out the suggestions made by the committee on resolutions and presented by Mr. Sweetser, the President being given until the end of the day to consider the appointment of the committee.

The following committee was later appointed: George A. Yeaton, Augusta; H. P. Sweetser, Orono; A. K. Gardner, Orono.

The President thanked the Press for their assistance, and also the members who furnished apples for the children.

Mr. F. R. Sweetser of Cumberland Center, Cumberland County, invited the Society to have a field meeting at his orchard.

The PRESIDENT: We thank you, Mr. Sweetser.

Dr. TWITCHELL: Mr. President, there is a little burden on my mind; may I relieve myself?

The PRESIDENT: Certainly.

Dr. TWITCHELL: It is said that at a recent large banquet in New York City, when the toastmaster called to order, looking about the tables he found that there was not a representative of the cloth present, so he called upon a leading actor to say a word of grace. Rising and looking over the audience he said, "There being no clergyman present, let us thank God."

Now, I think, Mr. President, we have a reason to be thankful this morning for the greatly increased interest manifested in this meeting as evidencing activity in our fruit interests such as some of us older ones did not meet with, and I am wondering whether that is not in part due to the increased interest and attention which has been paid to our field meetings during the past few years. For while I have not been able to attend, I have judged by the reports which have come to me from different sections that the attendance has been much larger than in former years. There has been a waking up of fruit growers everywhere, manifested this morning in the enthusiasm for you to hold field meetings, and the burden on my mind was whether in view of this

increased interest, and in view of the increased attention being paid our field meetings where we get right back to the man from the farm and on the farm, to the orchard and in the orchard, and where the greatest service this Society can render surely can be rendered there, because taking men of experience, men who have tried out the problems and solved them so far as they could be solved, and going back there they surely give inspiration which can come in no other way—and the point in my mind was whether this Society would not desire that the work be increased even though there be a clipping in some other direction. Because, if I remember rightly, when I was president of the society we found it was very easy to spend all the money we had and the balance at the end of the year was hardly visible. Since the State appropriation was doubled, we are giving liberal prizes, extremely liberal prizes—they may be necessary, I am not going to criticise at all—but I simply rise to make the suggestion to the members whether here is not a thought to which we might give attention, that of reaching out into smaller localities, to meet in individual orchards, taking there experienced men and stimulating their interest, which Mr. Sweetser feels would be stimulated in Cumberland, as I believe it would if such a meeting could be held there, or in Franklin County.

PROBLEMS WE HAVE MET AT THE BAY ROAD FRUIT FARM AND HOW WE HAVE SOLVED THEM.

Prof. F. C. Sears.

In planning my talk for the Maine Pomological Society today, I have tried to select those problems among our list which it has seemed to me might most nearly concern the Maine Fruit Growers as well as ourselves, although of course I appreciate the fact that every grower has a little different set of problems from every other grower.

I am going to begin with a problem which you may think I am foolish to mention, it is so self-evident, and yet which is the biggest problem of all, and that is the problem of getting large crops of apples. In a sense all of our other

problems center about that one, and yet I believe that we might make far greater progress than we do if we would concentrate our thoughts and efforts on solving this problem. Here are a few of the things which I feel certain ought to be more carefully considered than they usually are. *First*, more prolific varieties. There is a vast difference in the yields of our varieties, and we ought to be more particular in selecting them. We grow a long list of sorts that are indifferent in this respect. *Second*, the choice of a site on which to set our orchard. One site is adapted in soil and exposure to grow far more apples of a given variety than another site. The soil is adapted to the variety we want to grow (a very important point), and the site is less frosty and less exposed to wind. *Third*, feeding our trees. I shall speak of that more fully later, but it is an all important question. On many soils you cannot get good crops without good feeding. There is certainly a relation between growth and fruitfulness. *Four*, culture. Of course, this is very intimately tied up with fertilization, but it is a very important point, and I would not exclude the man who uses an intelligent system of sod culture from a list of those who, in my opinion, practice *culture*. *Fifth*, spraying. There are a number of things which we do not yet know about spraying, but we *do* know enough to say that as a rule it must be done and done well, if our orchards are to be successful. There are doubtless many other matters which will assist in the "big crop" problems, but if we will attend to the foregoing we shall most of us make a great advance.

Leaving now this question of big crops and taking up several others, many of which are intimately associated with the big crop question, I may take up in detail perhaps, first, the *spray program*, and the outstanding advance which we made last year over previous years was in the application of what is now called the "pre-pink spray" for scab. We have been in the habit of putting on a delayed dormant spray, followed by a pink spray (just as the blossoms are showing pink), this by the calyx spray and then a fourth spray about a month after the calyx spray. This past year we introduced another spray about a week before the pink spray, that is just as the buds were nicely broken open. And I

said to the foreman that in order to satisfy ourselves that this really was a necessary thing we would leave three rows down through the McIntosh block on which we would not apply this pre-pink spray. This was done and the whole orchard sprayed exactly alike in all other respects, and if you had not been told that there were three rows in that orchard which had not received the pre-pink spray you could have gone in and found them, from the larger amount of scab on the trees. We absolutely controlled scab in other parts of the block, but where this pre-pink spray was omitted we had a pretty fair infestation of it.

In this connection I want to touch on the matter of dusting, although perhaps I would do better to keep off of it since I am in what I understand is a dusting stronghold. We have not considered that as yet dusting has entirely proved itself, and since even the dust companies do not claim that they have a dust which will do for the dormant spray, we are recommending that our smaller growers stick to spraying. At the Bay Road Fruit Farm we have stuck to it so far, although we feel that we might perhaps use a duster in emergency. We have two large Friend power outfits which can usually take care of the work.

I want to say a word next on the problem of *tractors and trucks*. I appreciate that the tractor is a thing which would not be used by anyone unless they have a fairly large orchard. In our case we have used a Fordson tractor for the last four years, and have come to feel that we could not keep house without it. We not only use it in plowing and cultivating our orchard, where it is a "life saver," but we haul the power sprayer with it, and frequently use it in hauling barrels and boxes out to the orchard for picking, and hauling the fruit in again. On the truck question we have bought a Reo truck, with which to go to market, and we can leave the farm with a load of fruit and be in the city of Springfield, twenty miles away, inside of an hour. We use this truck a little around the farm bringing in fruit, but for the most part use a second-hand Ford truck for this purpose, and find it a wonderful improvement over the old horse and wagon when we have a lot of stuff to move.

The next problem I want to speak of is one already

touched on under bigger crops, and that is the question of *fertilizers and fertilizing*. It is too big a question to handle fully at this session, but I want to suggest three things in regard to it which have been borne in on me during the last sixteen years, while I have been trying to run the Bay Road Fruit Farm. The first of these is that we must absolutely get away from the notion that we can lay down a standard formula for our orchard blocks. We used to have a regular formula, 500 lbs. of basic slag, 300 lbs. of high grade sulphate of potash and 200 lbs. of nitrate of soda, which we applied to all of our blocks. Today we would no more think of carrying out such a program than we would of voting against prohibition. One must consider his variety, soil, the crop on the trees and many other things before deciding what to use for fertilizer. The second item on fertilizers which I think is important is that with poor land the trees not making a heavy growth, and with a heavy crop in sight, large applications of fertilizers are legitimate. On a Wealthy block which we have on our farm, on light soil and carrying a heavy crop, we have used as high as a ton of fertilizer per acre. Now you may say this is ridiculous, but let me tell you that this block has turned us a net profit, after all expenses have been paid, of around five hundred dollars an acre for three years hand running. The third item on fertilizers which I think is important, is to make an application of nitrate, usually using all that is to be applied to the block, early in the season. This is supposing that it is a bearing block of trees. We have made a practice of getting our nitrate on at least by the time the buds were breaking in the spring.

Another problem which we have struggled with ever since we began setting the orchard in 1908, is the question of varieties and fillers. These two questions are intimately tied up with each other and cannot be separated. I want to confess that in our case I feel sure that we have planted too many varieties. If we had stuck to Baldwins, McIntosh, Wealthy, Wagener and Oldenburg with possibly a few trees of a few others, we should be better off than we are today. As to fillers, we have used them fairly freely and in some blocks they have been decidedly profitable, but there is al-

ways the question of getting them out before they damage the permanent trees. In our case we have solved this last, in some instances, by moving the trees when eight or ten years old onto other land, and this has worked out very well. We have moved three or four hundred trees, mostly McIntosh, and nearly all of them have lived. In one case, out of a block of 75 trees, McIntosh and Wealthy, one-quarter Wealthy and three quarters McIntosh, we lost only five trees and four of these were Wealthies.

Another problem which we have found a decidedly serious one, and have not as yet entirely solved, is the question of our drop apples and what to do with them. We try to defer picking long enough so as to get good color on our apples, and if we do that we are bound to have more or less drops. Some of these can be sold in a fresh stage but that is a poor way to dispose of them. Everybody else is doing it and the market is consequently seriously depressed. This year we are putting a great many of them into cider and vinegar, selling the cider while it is perfectly fresh, only two days after making, and putting the residue into barrels and making it into vinegar. We have also used some for apple butter and hope to enlarge that side of the business. We run a roadside stand and can use such things as cider, apple butter, canned apples and apple jelly to good advantage.

The last problem which I may speak of is the question of storage and storage packages. As yet we have not built a real storage house, although we shall have to in the very near future. What we have done is to remodel an old barn and fix up a number of house cellars on the place, and have gotten along fairly well, although our crop of 5,000 barrels this year has hustled us somewhat. In our storage rooms we have gone after three things. First, in arrangement for getting the temperature as low as possible through ventilation; second, of course, a scheme for keeping the houses above freezing, and third, a scheme for keeping the houses moist. I believe the latter is too often overlooked. Generally we take care of the two former but most people do not consider moisture in the house at all. I saw a particularly fine house in Vermont this year which had a scheme of

water on a cement floor over the entire floor space of the house with a grated plank floor above, and they told me that it revolutionized the keeping of their apples.

For storage packages we are buying now the bushel box and displacing as fast as we can the old barrels which we have formerly used.

I have already talked too long, otherwise I might take up some additional problems such as the diversification of our business which we believe is a very important item, not to confine ourselves to apples alone but growing plums, pears, grapes, some peaches and strawberries; or the question of whether to keep livestock on the farm and if so what; or the question of growing other crops such as hay and potatoes. All of these questions are worthy of consideration in our case, and I believe frequently in the case of other growers.

BEE CULTURE.

Illustrated Lecture by F. L. MASON, Mechanic Falls.

It is rather hard to choose a subject for an audience not especially interested in bee-keeping. This has led me to choose views along the line of persons who only have in their possession a colony of bees and hesitate to go near them, or those who feel that they need bees and hesitate to buy them on account of the fact that they know nothing about them and do not feel like opening the bee-hive and taking care of it. That will be what these films will show.

This shows the bees at the entrance of the hive under normal conditions, guarding the entrance against intruders. One of the instincts of bees is to guard their stores by sending out guards. Bees that you see walking about the entrance and in the entrance and out again, not leaving the hive—there will be other bees going to and from the hive but these bees will apparently have no duty that you can determine—they are the guarding bees. In approaching a colony of bees these are the bees that should be subdued in the first place. A beginner should never approach a colony of bees without being prepared for it. Never go near a colony of bees on the spur of the moment. He should have a veil and gloves to protect the face and hands from the bees and he should have a bee smoker, that is, a smoker filled with rotten wood, or oily waste, or any material that will give out a smudge smoke. Now the theory is not to stupefy the bees in any way. The idea is this, that the bees when they are smoked fill their honey sacs with honey—in preparation for leaving their home they take a store of food with them—and when bees have their honey sacs full they are docile and easy to handle. The bee-keeper takes advantage of this. When you have yourself suitably protected and the smoker going well, blow a few puffs of smoke gently at the entrance of the hive. This will break up the guard of the

colony and the bees will then begin to fill their honey sacs with honey.

The next is opening the hive of bees. After you have lifted the cover from the hive and raised the inner cover, that is, the second cover, as you do so blow in gently a few puffs of smoke over the tops of the frames, and then with the hive tool shown here, a screw-driver, or anything of that kind, loosen the frames at both ends. They will be stuck with propolis. If you are looking for the condition of the hive it is well to choose a frame near the center, because there you will find the activities of the bees. The outside frames are apt to be filled with sheets of honey.

This frame is loosened and the operator is shown lifting this frame from the hive. Here the frame is lifted clear of the hive. One important thing about handling bees is to handle them gently. This does not mean extremely slow, but when you lift a frame from the hive be sure that there is clearance for the frame. Do not work hurriedly. Do not take the frame of bees so that if it does press the side of the hive or bind anywhere that it will slip from your fingers and drop back with a jar, because that jar will irritate the bees. But lift it firmly from the hive.

This shows the frames of brood placed about the hive and the operator is evidently looking for the queen. This is one thing that the novice seems afraid to do, that is, to remove a frame from the hive. When he gets into this position he acts a good deal as some people do driving a Ford—he is going to hold on to the thing anyway. Now this frame when it is lifted from the hive covered with bees need not be in your possession all the time. Stand it down beside the hive out of the way. This will give you clearance room in the hive.

This represents the queen, the drone and the worker bee, the three individuals of a hive. The queen is longer, larger than the others,—the largest individual in the hive. She is the true mother of the colony. She lays all the eggs that are laid in the colony. In the spring of the year at the height of egg-laying she will probably be laying from three to five thousand eggs a day. She is all-important in the colony. Without her the colony cannot exist. There is but one of

these individuals. The drone is the male of the colony. There are several hundred of these in a colony at certain times of the year. They are consumers and not producers. Their sole function is the fertilization of the queen. The majority of the colony—a strong colony in midsummer will probably contain from sixty to seventy thousand—are worker bees. The worker bee gathers the honey, gathers the pollen for the young bees, feeds the brood, cleans the house, protects the hive from robbers, as a matter of fact does all of the work about the hive, and protects the queen. Actually in the busy season the worker bee will wear himself out, or herself, for the worker bee is truly an undeveloped female as I will bring out later,—wear herself out in three or four weeks. During the dormant period in winter the worker bee's life is probably from four to six months; but in the summer time it is reckoned in the same number of weeks. The drone appears when the colony becomes prosperous in the spring and disappears during the early fall when the queen-mating season is over. He is driven out by the workers when he is no longer needed for fertilizing queens. The queen's life is probably from three to five years. However, the professional bee-keeper has learned she is not productive from a financial point of view much more than two seasons, and a great many use a queen but one season when they kill her and replace her with another queen.

This picture is taken for the purpose of showing the bees' devotion to the queen. The queen is in the center and the bees facing in, taking care of her, feeding her, continually. It is true that the bees feed the queen. However, personally I have very seldom seen this marked condition of the bees facing in toward the queen. Rather, the queen when she is found will be followed by bees that are taking care of her.

This particular view is something that the beginner should thoroughly understand. It is designed to show the brood in the various stages of development. It is all-important that the bee-keeper should understand the development of brood. It is a simple thing to understand this development but it is important because it is the key by which the bee-keeper works. It gives him the element of time in which he may perform certain processes. The egg as it is laid is

very small, probably the size of a large pin and about a thirty-second of an inch long, and adheres to the bottom of the cell. After the egg has been laid a short time you will see a milky substance which is deposited by the bees about it, and this is the food upon which the egg subsists. Now this egg will remain for three days in the egg state when it will hatch into a larva. This larva will grow very rapidly, will begin to show the ribbed condition, and will remain in the form of a larva for six days, when it will be sealed over, where it will remain for twelve days, when it will gnaw itself out of the cell, a full-grown bee. Here is a cell showing where the capping has begun to be gnawed away. I wish to emphasize the fact that it will remain three days as an egg, six days in the form of a larva, and twelve days it will be sealed, making twenty-one days from the laying of the egg to the hatching of the bee. Now this twenty-one days will vary with weather conditions, certain conditions will vary this, but it will be varied by a matter of hours. If any of you become interested in bee-keeping, the first thing that I would suggest that you do is to watch the development of the brood. It is done best in an observation hive. When you take the cover from an observation hive, which is simply a little, small, one frame hive with a sheet of glass on one side,—remove the outside so you can look in and you will see the queen about her work laying eggs. You can tell the exact time a certain egg was laid. You can make a mark on the glass with a piece of chalk around that particular cell, and you can observe that every day. I think it would be worth your while to do it, so you may know the development of the brood. For instance, if a professional bee-keeper opens a colony of bees and in looking through it he finds no eggs it at once awakens his suspicions. He does not see any eggs in the cells. He looks and he finds that there are being no eggs laid. Then his queen is gone. Then the next thing he asks himself is how long that queen has been gone and he can determine that by looking at the condition of the brood. If he can find only those that contain larvæ in a certain stage he knows that his queen has been gone over three days. He will determine by the look of the

larva in the cell and he will govern his operations in that way.

This simply shows a sealed frame of brood. This is the appearance of the worker brood as it occurs in the comb.

This should be interesting to a great many of you. If you start in bee-keeping you will find it necessary to read some bee-keeping literature, and one of the things that you will read is about cutting out queen cells, that finding queen cells indicates that your colony is going to swarm. It is surprising how many want me to tell them how a queen cell looks, and it is surprising, after I tell them, how many will not recognize the difference between them and some drone brood or an empty cell and will assume that it is a queen cell. This is worker brood here, and these are queen cells. This picture shows you two well developed queen cells. This worker cell is less than the size of a dry pea. These queen cells as they are shown here are as large as my little finger and about an inch long. These are suspended at the bottom of the comb but they may occur at any depression in the comb. If the comb has become bruised and eight or ten cells knocked out, it is likely that there will be a queen cell there when the bees get ready to throw off a swarm and are preparing for it.

This shows a worker bee with pollen brought in on its legs. Pollen is the dust from flowers and it is used for feeding the young bees.

This is a swarm of bees hanging from the limb of a tree. Now something as to the origin of a swarm of bees. In the spring if the bees have had a hard winter they are somewhat depleted, but as soon as they begin to fly they will begin to bring in pollen from alder and pussy-willow. The queen evidently recognizes that the active season has commenced and that it is time for her to commence her duties, and she will begin to lay eggs in the comb; and if there does not come on a rainy spell or something to shut up the bees and prevent their gathering pollen and a little nectar later on, she will increase her activities to the maximum when she will be laying from three to five thousand eggs. In three weeks after these eggs are laid the bees will begin to hatch,

and at that time the number of bees in a colony will begin to increase very, very rapidly, and if everything is prosperous the hive begins to fill with bees. Then the queen, apparently of her own volition, will begin to lay eggs in larger cells, and these will begin to seal over and eventually they will develop into drones or male bees in preparation for the coming mating season. When this prosperity and increase in number has developed to a certain point, the bees themselves, the worker bees, by some instinct that we hardly understand will in unison combine and begin to feed one of the worker eggs. There are only two kinds of eggs to start with, the male and the female, the fertilized and the unfertilized egg. The queen apparently lays these two kinds of eggs at will. The bees, when they reach this condition, will take it into their own hands, and they will take one of these worker eggs that normally was designed to develop into a worker bee, and they will feed it a special food, and a great abundance of it, and they will build out the cell about it until it has the appearance of the queen cell which I showed you, and a queen bee will come out in about sixteen or seventeen days from the time the egg is laid. Now when the hive has several, probably eight or ten, perhaps two or three, of these queen cells, at the time they are about ready to hatch and the young queens come out into that colony, a large portion of those bees that are then in it and the old queen will leave that hive and go to a new home. First they will go out and cluster on a limb near the hive and apparently send out scouts to hunt for a new home, usually a hollow tree in the woods, and then they will go to that tree and commence to build again and secrete honey and the queen will start in laying and thus start another colony of bees. That is the natural method of increase, leaving the young queen in the old colony with a large amount of unhatched brood. This young queen, thus left in the old colony, at the end of seven days will go out to mate with a drone and come back fertilized. She will start at once to lay eggs and that colony is then in a condition for existence. That is the natural method of increase.

This is another view of a swarm hanging from the limb of a tree. The swarm is probably the most fascinating thing

to the beginner of any part of bee-keeping, when the bees rush out and cluster on a tree.

This is a view of a person taking a swarm of bees from a tree, where it is within reach. This man has an ordinary bushel basket, with the intent of holding this bushel basket under this swarm of bees, shaking them into it, and carrying it to the new hive which he has prepared with combs. This is the method by which a great many secure their bees and is fairly familiar. If you are well protected with a veil, gloves and a smoker, even though a novice, you need not hesitate to undertake the hiving of a swarm of bees, because it is a very unusual thing to find a swarm of bees, at a seasonable time at least, that are cross. The hive is put in position, the combs are placed in it, or sheets of foundation, or frames with little strips of foundation, and the bees are dumped in front of the hive, and when you see them begin to go pell-mell into the hive that means the queen is in there and that they have accepted that hive.

Where it is possible, if they swarm in a tree that you do not care if it is destroyed, this probably is the most convenient way to take the swarm from the tree: take hold of the limb and cut it off, and carry the whole thing and lay it at the entrance of the new hive.

I have chosen here the package commercially used for shipping nuclei or bees to customers, because some like to buy bees in that form. This is the form in which the bees will arrive by express. This box may contain frames of brood and bees and a queen, or it may contain just simply the bees and the queen. If any of you buy bees in this way, there are only a few things to remember. First prepare your hive and put it in a suitable location. If you have a nucleus coming of two frames, it is well to put in three combs; then put a division board next—if you haven't a division board, take one of your frames and wrap newspaper around it, making a solid block to place next so as not to give this nucleus too much room. There are screws at the end of those. The frames are lifted off carefully and set into the new hive, and then it is well to take the box and shake what bees there are at the entrance. There should be no trouble with a nucleus. If this is a combless package of

bees, it will be just simply bees and the queen. I recommend that when such a package of bees comes, you take it into your cellar or some cool place and turn it bottom side up; set it down and let the bees cluster in the bottom of this, hanging down toward the top. Start the screws in the first place. After the bees cluster in the bottom, hanging toward the top, the box setting bottom side up, prepare your hive and have it ready, take it in that position, with the bees clustered, remove the cover which at that time is the bottom and lay it down by the entrance, and take the package and shake the bees directly into the hive, putting in your division board and placing the cover on, and then the package containing bees can be laid at the entrance.

This picture shows the placing of a nucleus in a hive. Probably the weather was fairly warm, or else this picture was taken without much thought, as the operator here is giving them free access to all of the hive. There is one thing that I would recommend you never do: in hiving a small quantity of bees, buying a package of bees or a nucleus, do not give them the whole hive, but give them just room enough so that they will cover the frames. It is truly quite disastrous to give them the whole hive, because they usually arrive early in the season and there is a great deal of cold weather afterward and the development of the colony will be retarded a great deal.

This is a queen mailing cage. This is simply a block of wood with holes bored in here, a piece of wire cloth nailed over here, a hole bored in each end, entering into these holes, these having access one to another—on one end a little piece of wire or perforated tin, and on the other is a piece of paper tacked over the hole. As you will receive it, here will be the queen and fifteen or twenty bees, attendant bees to feed her on the way. This end as I say will have a screen over it, these two holes will be filled with queen candy and on the end will be a piece of paper. This is the condition in which the queen will arrive. Why I have chosen these pictures is because I find a great many people have colonies of black bees which are cross and which they consider undesirable, which they do not like to handle, and would prefer to get into Italian bees. They wish to buy a

queen but they hesitate because they do not know how she will arrive nor what to do with her after she arrives. In hurrying I probably have skipped over the fertilization of the queen. When a queen is seven days old she comes out of the hive, flies into the air and meets a drone and mates with that drone. Then a queen is fertilized for life. Now then it is a common practice for persons in the south where queens can be raised earlier, to raise what we call purely mated queens. That is, they choose a location where there are no bees, and they take Italian bees there, and their queens when they go out are practically sure to mate with Italian drones from their home yards. These queens once mated are mated for life. Therefore, if you have black bees and send to a queen breeder and buy a purely mated queen and introduce that queen into your hive, in a short time you will see the yellow Italian bees coming out. As time goes on they increase in number, the black bees diminish in number, and before long you have a colony of Italian bees coming from this purely mated queen.

This is one of the methods of introduction. Almost invariably now queens come to you in these cages. On the top of the cage is the card bearing your address. When you tear off this card, if you turn it over you will find instructions for introducing the queen. It is necessary first for you to remove the old queen from the hive. This must certainly be done. Any queen cells must be destroyed. Tear the top paper off and lay the cage on the top of the frames, the wire side down. At the end of twenty-four or forty-eight hours it is well to lift the cover carefully and look at the end that had the paper on it. If things are going well, the bees in the hive will have become somewhat acquainted with the queen, they will have torn away this paper, eaten out the candy and liberated the queen. If they have not done so at the end of that length of time, it is well to take out your knife and tear off this paper. Then the bees will eat through the candy and liberate the queen. Here is one important thing if you send and buy queens. One of the books that I consider pretty near authority will tell you after this queen has been liberated, in forty-eight hours to open the hive and see if the queen is laying; and also to look for the

queen and if you can find the bees are balled up about her to paw them away and take the queen and recage her. Now it has been my experience that if you go and look into a hive of bees two days after the queen is liberated; that you will find them balling her. You may not, but you probably will find the bees balling the queen. And I have come to the conclusion that opening the hive and causing a disturbance at that time is what causes the bees to ball the queen and attempt to kill her. I therefore recommend that instead of opening the hive two days after the queen is liberated, as you will find recommended in a number of places in bee literature, that you wait from five to seven or eight days before you open the hive after you find the queen is at liberty.

This is the process of transferring. It is supposed to show you the method of transferring. I chose this picture because I contend there is no method of transferring. I do not believe that any one can give you any rule for transferring, because if transferring is necessary usually every box that you transfer from, every hive that you transfer from, or soap box, or nail keg, or log, or something of that kind, is different. Instead of describing transferring to you, I would recommend that if any of you contemplate bee-keeping and some one has given you a colony of bees in an old soap box or in a log, or in a nail keg, and you want to get them out and into a modern hive, that you go to some bee-keeping neighbor and see if you can get him to do it out of neighborly love. If you can, don't attempt to pay him because you can't pay him enough. Later, when you get into bee-keeping, you will realize what a trick you have played. The enthusiastic boy that is just starting in bee-keeping is the only fit fellow that I know of to transfer,—the boy that really likes to get into trouble and is so crazy over bees that he wants some excitement. Let him transfer. What I wish to convey is that a bunch of bees in an old soap box or nail keg is not a valuable gift, and don't accept it. Better pay out a little of your money and get something in a movable frame hive.

This shows a bee tree. I will not touch that subject at all.

Bees in the orchard. I shall not attempt to explain to you the subject of bees in the orchard. I do not know how much good or how little good bees do in an orchard. I have no way of knowing. But I have heard and have read of experiments, and they all point to a very great benefit from bees in an orchard. But I have not experimented myself. It is rather out of my field and I do not touch upon it. But I would like to tell you of one little incident. A gentleman living in a bee-line about two miles and a half from my home, possibly not as much as that, is quite an orchard man and pretty wise in orchard lore. He may not be as far up in theory and modern science and book study as a great many, but he has shown that he knows pretty well how to raise apples in a practical way. He was a practical producer. He has left his farm now and his son has taken it over. I asked him if they were having any apples over there. No, they were not having any apples over there, "he is not going to get any crop this fall and he won't until he buys some bees." "Is that so?" He says, "Yes." I said, "Are you sure they do good in an orchard?" "Oh, yes! yes!" He says, "What fools people about bees in an orchard is that they are not necessary every year. When the weather conditions are favorable the orchards in general will be visited by bees and will be sufficiently pollinated. "But," he says, "I have noticed several years in my experience—I know your bees when they come over to my house,"—The reason we knew them was because we had Italian bees and they were light colored and the other bees around there were black bees, dark colored, so light bees he called our bees, and it so happens in this case and at that time that he was right, that it was our bees coming to his orchard. He says, "I noticed in the majority of years your bees would come over to my orchard; but there have been two or three years when the weather was rainy, overcast, cloudy, so that we only had an hour or two of sunshine at a time during apple bloom, and in those years your bees didn't visit my orchard and my orchard didn't yield." He said that those same years Mr. Black's orchard—another man who is right in line from his house to my place but is about a quarter of a mile from our place, yielded well. He said, "I made up

my mind that on those days when they took a short flight, that they did visit his orchard and did not visit mine." That is the only thing I have to tell you about whether bees help in an orchard or not. Those are the words of a practical apple producer, of a man who does produce apples.

The next view is of bees in a green-house. I will skip that.

This shows a large apiary in the West. It is only important to tell you that the honey crop of the United States has reached more of a proportion than you have any idea. There are men in the West who produce honey by the car load, who run 10,000 colonies of bees. That is a matter of interest from the fact that it is remarkable to us.

This is designed to show the smaller apiary as it is carried on and also to show you the success that some reach in the production of honey. This hive here, for instance, shows a double-walled hive; this shows another one just like it in capacity, another one like it in capacity, another one like it in capacity and another one like it in capacity; that is, here is six times the ordinary size hive. This is occupied by one colony of bees and three or four of these should be full of honey.

This is past history in bee-keeping—the old-fashioned skep. The early history we will pass over. This is simply to show the advance made.

Here is an apiary on a house-top. I simply brought it to show you the extremes to which some people go in keeping bees. This is evidently in the city and here are bees kept on the top of the house. It shows you that probably you have some suitable location, if you are carrying on your farm, for bees—you probably have some place where you can keep bees.

These pictures, by the way, are loaned by the courtesy of the A. I. Root Company of Medina, Ohio. It is not my purpose to advertise their line by these views. Free booklets are issued by that Company. The G. P. Lewis Company of Watertown, Wisconsin, maintains the same service of issuing free booklets. By giving them your address, a great deal of free literature will be sent to you along with their catalogue which will describe other books on bee-keeping. Any

one who contemplates bee-keeping should interest himself in the literature that is printed on the subject. There are a great many valuable books, and that is one of the important things to do, to get literature on the subject. Of course the free literature that is given favors of the commercial. That is its purpose. It has to pay for itself in a way, but here is a booklet that is given by this Company, Bees and Fruit, which really contains a great deal of valuable matter about bees and fruit together with their advertising matter. A Beginning in Bee Keeping, Better Bee Keeping, Use of Honey, and others, all of them have valuable material. Their catalogue will accompany any of these and in it you will find books of recognized authority for every class of bee-keeper, beginner or professional.

Factors Which Control Fruit Bud Formation.

By GEO. F. POTTER.

The question as to where and under what conditions fruit buds are formed is one of keen interest to fruit growers. The fruit on apple trees is borne on spurs or short crooked twigs which are found on the branches of trees from two to ten or fifteen years of age. At the end of each of these spurs there is a growing point which early in the season forms a terminal bud. Under certain conditions this terminal bud may contain embryo flowers and under other conditions it contains only embryo leaves. Working with instruments by means of which the buds can be cut into sections $1/1000$ of an inch in thickness, and the structure studied under the microscope with greatest care, it has been definitely proved that when flowers are to be formed the parts are visible in June or July of the season previous to that in which the flowers open. The problem of finding out what causes determine the type of bud formed has not been so easy to solve.

This problem has recently been studied by Dr. E. J. Kraus and Dr. H. R. Kraybill and a new idea has been advanced which is of great interest to fruit growers. These men have studied the conditions within the plant, using all of the scientific skill known to the chemist and to the botanist. The practical farmer often regards such work as this as being wholly theoretical and of little value as compared to the information which comes from experience and practice. Experience is indeed one of the best of teachers yet those who learn from the experience alone do not always agree. It is evident, too, that it is not those farmers who have the most experience who are the best farmers for some men with only a few years of experience know a great deal more about the business than others who have worked in it for a lifetime. It is necessary to correctly understand one's experi-

ence and this the teachings of science frequently helps us to do.

The difference of opinion which may result from too limited experience is aptly illustrated by the story of three blind men who went to see an elephant. One of the men ran against the side of the elephant and said to himself, "Oh, I know now, the elephant is just like a wall". The second man grasped the elephant by the leg and went home with a firm impression that an elephant is a great deal like a post. The third blind man took hold of the elephant's tail and went home and told his neighbors that now he knew that an elephant is just like a rope. It is easy for us to understand how each of these impressions was received because we know the reason why the elephant appeared like a wall to one man and like a post to the other. In just the same way the knowledge which comes from scientific work may help us understand some of the contradictory experiences which we meet in fruit growing.

In order to comprehend the theory advanced by Kraus and Kraybill it is necessary to think of the tree in its three essential parts as root, stem and leaf. The work of the root is to absorb water and chemical substances which are dissolved in the water in the soil. Phosphoric acid, potassium, lime and many other similar substances are among those absorbed. Substances which are very similar to the nitrate of soda which can be purchased in commercial form, appear to be one of the more important elements which are taken up from the soil. The function of the root, therefore, is largely to absorb water and the materials dissolved in it.

The leaves of the tree are busy absorbing gases from the air. If one were to examine the leaves of an apple tree under a high power microscope he would find that the lower surface of these leaves is penetrated by numberless tiny holes. There are many thousands of these openings in each square inch of leaf surface. Scientists in years of careful study have proved that the leaves absorb carbon dioxide, a gas which is present in the air, through these tiny pores, and that by using sunlight as a source of power the green leaf is able to build sugars out of this carbon dioxide and the water which comes to the leaves from the roots. Some of these

sugars which are manufactured in the leaves are used immediately in growth and some, under ordinary circumstances, are changed into starches and other substances which are stored away for future use. The chemist gives the name *carbohydrate* to any or all of these materials which are manufactured by the leaves.

Between these two important organs, the root and the leaf, the stem acts as a transportation or railway system. As a matter of fact, it is a double track system and in the inner or heart wood of the tree there are a series of vessels which carry the water and salts absorbed by the roots up to the top of the tree and to the leaves. No growth of the roots can take place unless the roots can obtain the sugars, and similar materials which are manufactured in the leaves, and it is found that there is a second system of vessels in the outer part of the trunk which carries these so-called carbohydrates downward to the lower parts of the tree and to the roots.

Knowing that these two materials exist in the plant and that both are necessary for growth, it occurred to Dr. Kraus that the factor which might control the formation of a fruit bud or of a leaf bud on the end of a spur could be the relative quantity of the water and materials absorbed by the roots as compared to the quantity of sugars and starches present at the end of the fruit spur. Tomato plants were placed in a shaded position so that they were unable to supply a large quantity of carbohydrates but were well supplied with water and nitrates from the soil. The result was a very vigorous vegetative growth. The plants "grew all to tops". Other plants were placed under conditions where the supply of water and of nitrates from the soil was very limited but there was plenty of sunlight and therefore a large quantity of carbohydrates were present in the plant. Under these conditions the plants became packed full of stored food particularly in the form of starch. They grew very slowly and there was a very small proportion of fruit buds formed. A third series of plants was grown under conditions which just balanced the supply of manufactured sugars and the supply of materials taken from the soil. These plants made a moderate growth and formed fruit buds

abundantly. The amount of flowers formed could be regulated at will by controlling the relative amounts of these two materials available to the growing points of the plants. This idea explains many things in horticulture which formerly were hard to understand.

We realize now why the water sprout which grows out from the main trunk of the tree close to the supply of sap from the soil makes a long, vigorous growth but does not form fruit buds. It is almost always shaded so that its leaves cannot form the proper amount of sugars and starches to balance the abundant supply of sap from the roots. In consequence it grows wood rather than fruit buds. We have all seen water sprouts which have grown up through a tree and out into the light above the main branches and have noticed that as soon as the water sprout gets out into the light it becomes fruitful as the other branches of the tree. This we should expect, since it is then able to manufacture starches and similar materials to balance the supply of sap from the roots and therefore the proper conditions for formation of fruit buds will be reached. Some years ago one of the horticulturists in the Experiment Station in the state of Illinois propagated a number of trees, using water sprouts as scions for one lot and twigs from the ends of bearing branches for scions for another lot. He rather expected that when these young trees came into bearing those which had been taken from the water sprouts would not be as fruitful as the others. However, when the trees began to bear they were all alike and it is evident to us now that they should be all alike. The water sprout is not different from any other twig on the tree excepting in the nutritional conditions under which it grows.

Professor Gourley in his experiments at the New Hampshire Experiment Station showed very clearly that trees which grow in sod are not well supplied with nitrogen. On this account such trees usually accumulate a large excess of carbohydrates and because it is not balanced by a corresponding supply of nitrogen they make a slow growth and do not produce large quantities of fruit. It has been an almost universal experience of fruit growers that where trees in this condition receive applications of nitrate of soda

or other nitrogenous fertilizer that they immediately show a large increase in yield. This is to be expected since when the large accumulation of carbohydrates is balanced by the application of the requisite amount of nitrogen, the proper conditions for fruit bud formation had been supplied. On the other hand, nitrogenous fertilizers have not in general given increased yields when applied to cultivated orchards. The cultivation itself releases nitrogen from the soil and the balance between nitrogen and carbohydrates is nearly correct in these trees. To increase the supply of nitrogen would give an excess of this element and we would expect it to cause increased growth of wood and reduced fruit bud formation. This is exactly the experience which frequently follows the application of nitrogenous fertilizers to cultivated trees.

The ideas which have been given us by Kraus and Kraybill help us also to understand the effect of pruning upon an apple tree. When one removes a branch during the winter he takes off a considerable amount of leaf products which have been stored in that branch. Ten to fifteen per cent of the green weight of a branch of a tree may be sugar or substances which can be changed to sugar by the proper chemical process. At the University of Wisconsin a nourishing feed for cows has been made by chemically treating sawdust to transform these materials into sugar. Every time one cuts off a branch from a tree he is taking away some of the sugar which has been stored up. Since none of the roots are removed the same quantity of water and materials from the soil will be absorbed. Because some of the sugars and leaf products have been taken off by the pruning and because there are a smaller number of leaves remaining on the tree to manufacture these products the tree which is heavily pruned has correspondingly less of the leaf products compared to the sap from the roots. The result is a tendency for the tree to grow large quantities of wood rather than to form fruit buds and this is particularly true when the branches removed have large ones. Where a big branch is taken off there is a very great over-supply of soil products at the point where this branch was removed and an under-supply of the sugars and starches from the leaves.

The result in almost every case is a vigorous growth of water sprouts.

In pruning it is a much better plan to remove a large number of small branches than a few large ones. Under ordinary circumstances where the pruning is attended to year after year it ought not be necessary to make cuts of more than one to one and one-half inches in diameter. When the pruning is done in this way there is no decided unbalancing of the nitrogen and carbohydrate ratio at the point where the cut is made. Removing of these small branches from the outer part of the tree allows the sunshine to enter and the leaves on the fruit spurs are therefore able to manufacture the necessary carbohydrates. The soil products which were intended by the tree to be used in these small branches removed in pruning are given over to the fruit spurs and twigs. The spurs are therefore well supplied with both the carbohydrates and the necessary nitrates, yet neither one is in excess and the result is that they form fruit buds abundantly.

The best index available to the fruit grower which will enable him to determine whether or not he is correctly maintaining the proper balance between carbohydrates and nitrates is the growth which is made by the spurs and the frequency with which they fruit. A spur under proper nutritional conditions should bear an apple every second year and should make an annual growth of from one-half to one inch. The growth of the twigs is also an index and to a certain extent the color of the foliage. Trees which are over-supplied with nitrates ordinarily have very large and very dark green leaves. On the other hand, trees which are under-supplied with nitrates and in which there is therefore an over-accumulation of starches and sugars are usually of yellow appearance. A medium dark green color which is associated with good, but not excessive growth, should be sought.



ANNUAL REPORT

OF THE

State Pomological Society

1923



MAINE STATE POMOLOGICAL SOCIETY.

ANNUAL MEETING.

NOVEMBER 22, 1923.

City Hall, Portland, Maine,
November 22, 1923.

The meeting was called to order by the President in the Chair, at 10.30 o'clock A. M.

The CHAIR: "The next in order is the Treasurer's Report."

TREASURER CHASE'S REPORT.

Buckfield, Maine, Feb. 1, 1924.

To the Commissioner of Agriculture:

Annual Report of Treasurer of the Maine State Pomological Society.

RECEIPTS.

Working Funds.

Jan. 1st, 1923.	Cash on hand (as shown in last report).....	\$6 60
Jan. 9	Received from State Treasurer	768 98
Jan. 22	Interest on Bank Stock	16 00
Feb. 20	One Life Membership fee (transferred)	10 00
Mar. 8	From State Treasurer	1,035 71
March	Two Life Memberships (transferred).....	20 00
April	Two Life Memberships (transferred).....	20 00
July 9	From State Treasurer	195 28
July 19	Dividend on Bank Stock	16 00
Nov. 30	One Year's Interest on Liberty Bond.....	42 50
	One Year's Interest on Other Bonds.....	45 00
Dec. 5	From Portland Chamber of Commerce	810 00
Dec. 15	Received by error in Hotel Bill	8 00
Jan. 2, 1924.	Four Life Memberships (due for transfer).....	40 00
	Four Annual Membership Dues	4 00
Jan. 7	Dividend on Bank Stock	16 00
	Total Receipts	\$3,054 07

Permanent Fund Invested as Follows:

Four shares Farmington National Bank Stock	\$400 00
Two \$500 bonds—Stockton Springs Water Co.	970 00
One Liberty Bond	1,000 00
On deposit in savings bank	390 00
Due for transfer from working funds	40 00
Total	\$2,800 00

DISBURSEMENTS.

Order No.	Paid to	
114	W. C. Robinson—Envelopes	\$13 25
115	W. W. Robinson—Expenses	13 15
116	Lyman K. Lee—Exec. Com. expenses	9 95
117	National Shoe & Leather Bank—Note	500 00
118	J. P. Hutchinson & Co.—Treasurer's bond	5 00
119	R. A. Van Meter—Speaker at Orono	37 09
120	W. C. Robinson—Expenses	21 33
121	Arthur Kellsall—Speaker at Orono	16 00
122	E. L. White—Six months' salary and expenses	82 40
123	T. E. Chase—Exec. Com. expenses	6 60
124	Portland Chamber of Commerce—Dues	25 00
125	W. C. Robinson—Expenses	10 32
126	A. K. Gardner—Speaker field meetings—Expenses	8 49
127	W. C. Robinson—Speaker field meetings—Expenses	36 40
128	W. H. Conant—Speaker field meetings—Expenses	21 45
129	H. P. Sweetser—Speaker field meetings—Expenses	14 44
130	Bastian Bros.—Badges for annual meeting	34 53
131	A. L. T. Cummings—Federation dues	6 00
132	Arra S. Mixer—Judge, annual meeting	15 00
133	Premiums—boxes and barrels	829 50
134	Premiums	538 00
135	W. C. Robinson—Expenses	19 17
136	A. K. Gardner—Judge annual meeting	60 39
137	Lyman K. Lee—Exec. Com. expenses	15 75
138	Maine Farmer—Printing	25 00
139	A. M. White—Secretarial work, annual meeting	10 80
140	Transfer to permanent fund—1922 life members	40 00
141	Transfer to permanent fund—1923 life members	50 00
	recd. up to July 1.	
142	Banquet tickets	7 50
143	Falmouth Hotel—Officers, speakers, judges, etc.	129 00
144	R. A. VanMeter—Speaker annual meeting	23 57
145	Chas. P. Lyford—Stenographic report	30 00
146	Portland Chamber of C.—Telephone bill, City Hall	5 70
147	E. H. Doughty & Son—Trucking tables, etc.	51 25
148	S. D. Lincoln—Carpenter work, City Hall	76 94
149	E. W. Dolloff—Expenses	13 10
150	L. B. Raynes—Typewriting lists	7 50
151	N. D. Stanley—Expenses	30 08
152	T. E. Chase—Expenses	15 03
153	E. F. Hitchings—Judge annual meeting	42 33
154	G. A. Yeaton—Expenses, judge	13 35
155	G. M. Twitchell—Speaker	22 69
156	F. K. Jack—Envelopes	10 96
157	N. D. Stanley—Expenses	10 26
158	G. A. Yeaton—Expenses	19 41

159	T. E. Chase—Expenses	10 00
160	T. E. Chase—Six months' salary	12 50
161	Dudley Alleman, Chairman N. Y. Fruit Show Com.	50 00
162	Rent of safe deposit box	3 00
	<hr/>	
	Total disbursements	\$3,049 18
	Feb. 1st, 1924. Cash on hand	4.89
	<hr/>	
	Total	\$3,054 07

Respectfully submitted,

T. E. CHASE, Treasurer,
Maine State Pomological Society.

The CHAIR: "You have heard the report of the Treasurer. What is your pleasure?"

It having been regularly moved and seconded, the report of the Treasurer was unanimously accepted.

The CHAIR: "Next is the Secretary's Report."

SECRETARY WHITE'S REPORT.

The Executive Committee have been called together for two committee meetings during the year.

The first meeting was held in Lewiston in connection with the Western Maine Fruit Growers' meeting.

The second meeting was held in Augusta, June 9.

Arrangements were made for our field meetings and the annual meeting in November.

The first field meeting was held at Highmoor, August 21st.

This was the largest attended field meeting ever held by the Society, with an attendance of 2,500.

The Society wishes to extend their thanks to the Department of Agriculture and Extension Service, and all others who so kindly aided to make this meeting a great success.

The second meeting was held at the McArthur orchards in Limington with an attendance of 125.

The orchards were inspected in the forenoon and the addresses and discussions were given in the afternoon in the Town Hall.

The third meeting was held on Munstmag Farm in Woolwich.

The inspection of the orchards in the forenoon brought out many helpful lessons to the one hundred and fifty visitors.

The Society and visitors were grateful for the royal welcome given them by the proprietors of Munstmag.

These meetings are a great benefit to all who attend.

A great deal of credit is due to the citizens of Maine who worked for the representation made at New York from the orchards of Maine.

The CHAIR: "The next is the election of officers."

N. D. STANLEY was elected for PRESIDENT.

W. G. CONANT, for 1ST VICE-PRESIDENT.

W. J. RICKER, for 2ND VICE-PRESIDENT.

T. E. CHASE, for TREASURER.

E. L. WHITE, for SECRETARY.

Member of the Executive Committee for three years:
Lyman K. Lee.

Member of the Experiment Station Council: Mr. W. H. Conant.

State Vice-President for American Pomological Society:
George A. Yeaton, State Horticulturist.

Three delegates, Federation of Agricultural Societies:
Wm. C. Robinson, N. D. Stanley, W. H. Conant.

2.30 P. M.

The CHAIR: "Our first speaker is Professor Van Meter from Amherst, Mass."

PROFESSOR VAN METER.

"The President has given me a wonderful chance to introduce myself, but I guess I won't do it.

This subject of pest control is one of the largest things in fruit growing that we have to face anywhere. It doesn't consist only of spraying, and that is one thing that some of our sprayers have taken a long time to find out. I have

been acting in Massachusetts in the capacity of trouble seeker since 1917 and have had some very interesting experiences along the lines of pest control. I can see where, in a good many ways, the problems are more difficult now than they were five years ago. Some lay it to spraying or spraying material. In many instances, the spraying is not at fault at all. The orchard must be in condition for the spray to obtain results in controlling pests. In 1908 there was a boom in orchard planting and here too. We have had a lot of young orchards coming along with fillers in them. The filler tree is all right, if handled properly. As they grow the orchards become thicker and then begins the question of pest control. The first step in pest control is to get the trees thinned out and pruned down until you can do a thorough job of spraying or dusting. In Massachusetts we found out that we could improve apple trees by using fertilizer and nitrate of sulphur, but remember this, when you fertilize you increase the size of the leaves on the trees and the amount of foliage as trees become more vigorous. Fertilizer is all right, most orchards need some, but when you start to fertilize you have to prune harder than you used to to get trees opened out so that the sunlight can get in. Let the sunlight in and prune harder when your trees are not so vigorous, and keeping those two things in mind you can begin to spray.

I hope you realize the difficulties of my position this afternoon in trying to tell you how to spray in Maine, because our conditions are a good deal different from yours. I do not even know what pests are bothering you and giving the most trouble to you. I would like to have you tell me a few things as we go along. I can't stand here and tell you how to spray in Maine not knowing your problems, for it will not work. If there was a rule to name, it would be a simple proposition. There is no such thing, every man has his problem and every orchard is an individual problem. All I can hope to give you are some ideas that may help. I am not going to talk spray schedules without getting them down in shape, so I am going to write the name of the pest on this blackboard where we can get a look at them and then tell you what we are doing to control them.

What are the worst pests in Maine?

Apple Scab,
Orchard Scale,
Apple Maggot or Railroad Worm,
Blister Blight,
Borer,
Web Worm,
Green Aphis,
Leaf Roller,
Honey Moth,
Coddling Moth.

Now let us spray them first and dust them afterwards.

What sprays are you using for these pests?

We are using a spray, lime and sulphur. This is the old standard spray for scale. Three or four years ago I wouldn't have known where to go to find orchards free from scale. Some of the best orchards in the State had it. I do not know how bad it was here a few years ago, but we certainly had plenty of it down there. It killed some orchards. Since scale went out, the boys have quit putting this spray on, but they are coming in Massachusetts again and they will have to go back to it. In the middle west, this spray of lime and sulphur doesn't control this pest, and they have obtained results from using machine oil which is a spray made from engine oil. Are you having any trouble with it here? It is coming back in the orchards of Massachusetts. Since it is considered a troublesome pest, lime and sulphur must be applied. We do not want to forget how entire groups of trees in some orchards were spoiled. It is a very good spray on the whole.

We are using a spray consisting of Black Leaf 40, lime and sulphur, and nicotine. About $\frac{3}{8}$ of a pint of Black Leaf 40, or any other just as good, 6 gallons of lime sulphur to 50 gallons of water, and about $\frac{3}{8}$ of a pint of nicotine. The lime and sulphur is for scale and other similar insects.

You ought to determine what you are going to use for yourself. Certainly you can afford to spray to get clean fruit. What is your next application? Most of you use pink spray. The pink spray is all right.

It is important to spray before the apples get a start in the case of the leaf-eating worms, such as codling moth. If you do not do this, the worm is inside where you cannot get it. It doesn't do much damage in young orchards but in old orchards there seems to be found a worm which gets into the blossom cluster and ties it together.

Apple scab has bothered most in the past years. Everybody knows what it is. The Experiment Station took up the matter in an effort to work out spray schedules to control apple scab. They found the original schedule was all right if used properly. The growers were not using it at the right time or enough. Some have now controlled it for three years in succession. It was a very serious pest, but we can control it. I am not afraid of it any more. Now the scab, you must understand, lives over winter on the leaves on the ground. Some growers have theorized on gathering up the leaves and burning them. Fine, if you could, you probably would free the orchard from apple scab, but you miss too many leaves—you find them in the stone walls and pastures and everywhere. Another theory is to use spray material and burn the leaves up while on the tree before they fall. That has been tried in some parts of the West, but the result does not amount to anything at all. Of course, if you burned up every leaf you would destroy it, but you miss too many leaves.

When you spray you want to spray the under side of leaves as well as the upper, that is, if you open your spray gun wide and stand back, the upper side may be wet and the spray will drip off and the under side may be completely exposed as if you hadn't sprayed at all. If the trees are old, get under the trees and spray up. If the trees are young so that you cannot get under them, spray across the tree and get at the leaves in that way.

Apple scab comes like wildfire if the weather is favorable. You do not see any in the orchard in the early spring, but it is there on the under side of the leaves, and along some time after the apples are set, in July, or thereabouts, these spores on the under sides of the leaves begin to discharge spores a second time, and they keep coming. If you spray when you see it you are not too late. This last application

of spray is the second one. You have to begin to control scab before the blossoming is over. If it gets a start you can help a little by spraying later, but you can never get it under control.

Some sprayers have told me that there was no use in spraying for apple scab. They have sprayed and gone back in a week or ten days and found trees black with it. Sure they are. The trees were not sprayed early enough, and the spores had a start, they take time to germinate, about ten to fourteen days, and the spots were there under the spraying material. If this happens, spray immediately, nevertheless, there are thousands of other spores that may start. If it gets underneath the surface of the leaf you cannot do anything, but if you get the spray underneath the leaf, it is going to help.

Now to go back to pink spray, the discharge of spores early in the spring is much less than the discharge later, not so many within a period of a few days, so that you have a very good chance to keep the trees covered while they are coming. The scab would soon die out, if it didn't get a foothold, there would be no carry-over, but there is a lot weighing against you. In the spring, new leaves are coming out, almost over night, and they are not sprayed at all unless you spray pretty close together. The pink spray is fairly sure. Now, if you are sure that you can spray all your trees within two or three days at just the right time, all right, you can get a big start toward controlling apple scab. Do not wait until too late, and get on as nearly a complete covering as possible. The time at which these spores discharge is partly dictated by weather conditions. Watch the trees. When the blossoms show pink, get the spray on as thoroughly as possible. Also the question of pruning comes in strongly. You must get the sunlight and air in. If your trees are thick and dense so that the light and air cannot get in, if they are not pruned enough, you have ideal conditions for the spread of apple scab. When rain is frequent and there is moisture on the leaves, these spores germinate just as soon as they light, and you have spots. Open them up, give the McIntosh trees plenty of air and room. It will be a big step in scab control.

Most of our growers are using lime sulphur, summer strength lime sulphur 1-40, or 1-50, is strong enough. Now, whether they put any arsenate of lead on depends upon whether they have any eating insects in the orchards or not. Pink spray is lime and sulphur, 1-50. That controls apple scab.

For tent caterpillars and leaf-eating worms, you need arsenate of lead. Put some Black Leaf 40 in this spray. Use this with pink spray for these worms. The use of this depends upon what you have in the orchard. You may not have to use it if you don't have them. Use on winter trees because they may do considerable damage. The next spray applies everywhere the apple is grown. It is what we call a petal fall spray,—it is put on just after petals are off. It goes under various names. We use for that, lime sulphur, 1-50, arsenate of lead, and a pint and a half of Black Leaf 40. I think that as a rule that three-in-one spray is a very good investment. The lime and sulphur is for apple scab. If there is any chance that the others will do good, put in Black Leaf 40 too, and arsenate of lead. You can put on three materials with the same expense so far as putting them on is concerned. Make it that if you have any pests in the orchards. That spray does a lot toward controlling apple scab. You always will miss a few scab spots. No spraying is perfect. Even by doing the best you can, some parts of the leaves will not be covered. They make trouble later, but this spray will catch some of them, and will help you materially.

The codling moth comes into action when the apple is set after petals fall. If you do not time your spray properly, then you will get into trouble. The spraying doesn't have to be quite so accurate for most pests. This three-in-one spray is quite valuable, after the petals fall. But it isn't very often you have to use all of them. Some growers, but not very many, use five.

This next spray is a special spray for curculio, which is the worst and meanest pest that we have to fight in Massachusetts. It is on the increase in many orchards. It will ruin an apple as quickly as any other insect I have ever seen, making marks on the fruit after it has grown a little.

It quite often makes a russeted spot. That shows when the damage is done and when the apple is getting a little size. It very often makes a spot like that, and sometimes spots of a different character. It makes a crescent-shaped cut and then lays an egg in the center. Sometimes the egg will hatch out and the worm will go down into the core of the apple and the apple falls prematurely. If the apple grows rapidly enough, the worm does not always hatch, but the mark is there and the damage done. It is rather difficult to control. This same insect does great damage to plums, but it does more damage to apples than plums. It appears in the spring along about the time of the pink spray. By using an arsenate poison, you can poison a few of them, but never get all of them. You get a few with the pink spray and more after that by using the arsenate of lead after the petals fall, but still you do not get enough to gain control. You can see how they might easily become one of the worst pests you have. They work along for a considerable period of time, and they do their work at a time when growers haven't made a practice of spraying. Where you do not get the early spray for scab on, and the later spray, and the still later summer spray, they do not have anything to bother them and they wax fat and happy. We have found that it helped a great deal to clear up any trash which may have collected around the orchard. This insect gets its harbor for the winter in the stonewalls and heaps of rubbish, they do not stay in the orchards. By burning over a narrow strip around the orchard you can kill a lot of them and have much less trouble in the orchard. Do this in the late fall or early spring when there is less danger of fires. Clean up the trash piles and you will eliminate a lot of these pests.

If you have a lot of trouble with apple maggot or railroad worm,—that is giving some trouble in a few orchards but not usually in well-sprayed orchards, but once in a while it comes in,—the special sprays for that should be put on the first of July,—some are getting on two in severe cases, one the first of July and the other on the 15th. Get the sprays on early in July, about two weeks apart. When you once get it out of the orchard, it won't come again for several years. But, remember, if you have a severe mani-

festation of the apple maggot or railroad worm get the first spray on about July 1st and another one two weeks later.

Another trouble is sooty blotch. This is easy to control, but troublesome. The usual practice of growers is to stop with the third spray and in that case there is nothing to prevent the spread of blotch all summer long. So that if you will spray for sooty blotch late in the season, you will also stop late spread of apple scab. Just before picking time, when the conditions are favorable, like rainy, moist weather, all at once the fruit becomes scabby. A spray would stop all that. I think that last spray for sooty blotch should go on about the end of July.

Now, I cannot say just how many times you should spray, but it should be often enough to get clean fruit. Some accomplish this by three sprays, but this depends upon whether you have the apple maggot or sooty blotch to spray for. Some growers can get good fruit by using just the three sprays. Where trees have plenty of room, sunlight, and circulation of air, it helps a lot. Where trees are easy to spray the pests cannot get ahead of you. Most McIntosh growers use three pink as a guard, and they get a fair control. Still others will use five, and, occasionally, six and seven, and they apparently have no better control than those who use only three. It depends wholly on the orchard, the man, and the spraying material, and the thoroughness with which you cover the trees. By doing a thorough job you can cut down some sprays. We think that in Massachusetts a man can grow good fruit without putting on more than five sprays at the most.

Just a word about materials. Most growers are using lime sulphur. Few growers are using the Bordeaux Mixture. It is stronger than lime sulphur and it sometimes causes an injury to the fruit, a sort of russet mark on the apple. But some growers use it with the pink spray before the fruit is set. If used before the fruit is set there is no danger of it causing this injury. The lime sulphur is usually strong enough. We are going to stick to that. Some growers are using dilute lime sulphur and it gives them just as good control as the liquid lime sulphur. The Bordeaux

Mixture is used in the Northwest, but they have things we do not have.

Now, there are a few other spray materials that we have tried out in the summer schedule, but they are so little used, that, unless some one wants to talk about them, I will not take time to discuss them.

The practice of dusting has come in, in Massachusetts. A good many growers are using dust, and a number of them seem to be getting along pretty well. Some growers have no use for it, and other men won't use anything else. It makes no difference what we say,—dusting will control pests, it is going to come, in spite of what we say, and it is much nicer and easier to use. For the three-in-one spray a 90-10 dust is used. Instead of using liquid spray use a 90-10 dust. A good many growers are using for the petal fall spray and for the later application a 85-15 dust. This applies for the later application where you are trying to poison something. The sulphur dust has, in the Station experiments, given good control of apple scab. The fruit has been fairly clean, although there have been more leaves affected.

Some other growers find they can afford to use dusters in conjunction with the spraying machines. They can afford to have machinery and use it as accessory to spraying. Where the control is very important, get on early spring spray and supplement spray by dust in the summer. I doubt, in fact, I feel quite strongly, that we cannot afford to discard dusting yet. It is doing fairly well, in summer applications, with some growers. Some have no use for it at all. Just as much depends upon the way you dust as it does upon the way you spray. Of course, we may discard dusting entirely after all. I hope that the time will come when we can discard frequent spraying. We must grow better apples on the average than we have in the past. Something will have to be found that will give us better control over the pests in the orchards. If dusting will do it, then dusting will be developed and improved. I don't know when that time will come. There are several other diseases that haven't been spoken of in the spray schedule which are

fairly common. There are a good many in Massachusetts, but a number are not anything you can spray.

We have had quite a little trouble with Cedar Rust in Massachusetts. This causes a yellowish spot on the fruit. Another trouble is a little worm that has come in this fall and done a great deal of damage. This is a rose apple worm. The spray shortly after the petals fall spray will do more to control it than anything else. This appears early in the summer weeks, and works just under the skin, making a pick and a mark on the side of the apple. It spreads and will go all through a barrel of apples, causing the loss of a barrel of apples after they are picked, as they chew up a lot of apples in the barrel. There has been a great deal of trouble from that this year. It hasn't been serious before. Since it is an eating insect, it can be poisoned. This type is the easiest thing to control.

I have run over my time, are there any questions?"

(Question from some one in the audience.) "What about brown leaf?"

Professor VAN METER: "We have had that trouble off and on in Massachusetts. The trees will look all right, and then brown patches appear on leaves, sometimes leaves fall off altogether. Usually comes on old trees. It seems to be a browning toward the sun of the leaf, the veins running out will cause brown area. Sometimes it comes on the tip. Watch the spray material, it is likely to be that if the edges are burned. I have noticed this trouble in a very dry season in high ridges and barren soil. Very strangely also in wet season in low wet soil. It looks the same. For some reason or other, the leaves are unable to get the moisture that they require. Then again the moisture may not be there for them to get. Get after them with extra fertilizer to re-invigorate them, and the trees will come again all right.

With regard to spray pressure. You should get enough pressure back of the spray guns. They will do better work at 300 pounds pressure than 200, a great deal. If you cannot get that with the spray or pressure gun you have now, get a new machine that will deliver the pressure you want. It is not efficient at under 200 pounds pressure. It really

should be about 250. If the pressure is too low, it doesn't break up the spray material into mist, you must have the pressure for fine mist.

Fire Blight is something we never get excited or do much of anything about. Fire Blight will not live unless it is in a big branch. If you keep on having blight on old trees, cut out branches on which it shows and is spreading on. Blight comes rapidly and lives during spring, but stops when dry season comes on. Of course, it will kill trees if it isn't stopped, but they look a whole lot worse than they really are."

The CHAIR: "Our next speaker is Dr. G. M. Twitchell."

REQUISITES FOR SUCCESSFUL ORCHARDING IN NEW ENGLAND.

Mr. President, Ladies and Gentlemen:

"Times are changing, conditions are changing, seasons are changing, methods are changing, markets are changing, pests and diseases are changing, everything about us is changing. Where are we? Do we stand waiting the next development or are we clinging to old-time practices which, good in their day, have gone never to return. What will 1924 demand of us devoted to fruit growing? You and I are concerned only with what is to be. The day for setting apple trees along the division line or roadside has gone, the day for setting an orchard and then neglecting it has gone, the day for many of the old-time favorites has gone, the day for the red apple has come and quality is the one requisite. The freeze of 1917 killed the Baldwins in most sections. What shall we set? Not in multiplied varieties but in multiplying trees of a very few varieties adapted to the locality are we to find our place in the markets of the future. To my mind there is a specific educational work for this society to cultivate purpose to increase orchards of one or two varieties, having special reference to adaptability to locality. When buyers are assured of carload lots of given

varieties competition will increase. Under existing conditions there is danger of multiplying varieties, insuring subsequent loss. Pests and diseases are increasing in numbers and virulence, transportation rates are becoming prohibitive, forcing the multiplication of auto trucks; the problem of marketing forces attention to laws governing grading, packing and branding, and the necessity for more critical inspection was never realized as today. With Maine so peculiarly adapted to fruit growing it is up to us to remove the handicaps which, if not removed, will permanently retard progress and finally destroy the industry. These granite hills, carrying as they do minerals of value in perfecting quality, will sometime be covered with trees if we heed the lessons so clearly spread before us.

This society offers the medium for directing the energies of the State towards the protection and promotion of the industry. The death of so many trees the past eight years puts before us a most serious menace in that every one, not cut down and burned, becomes an ideal incubating field for all pests and diseases. The increased attention, now demanded to insure clean fruit, is causing neglect of many trees along the roadsides, walls or line fences, every one adding mightily to the difficulties the live grower faces. Certain that still more critical attention must be given to control of pests and diseases and that expensive, high-power machinery alone can minimize cost of production and increase per cent of Number One fruit; the small grower is certain to be forced to the wall.

Profitable apple culture today hinges on operations of sufficient magnitude to make profitable the very best power machinery for dusting or spraying, cultivation, grading and packing, and in handling the fruit. Here is a condition, not a theory, and the best good of the industry alone can determine official action. Nothing but community work can save the man with three hundred trees or less. The necessity for this protection is not appreciated and any attempt to so protect would place a heavy burden on those who insist on going alone. Until, through cooperation by communities, necessary machinery is made available the cost of growing clean fruit will be prohibitive to the owner of small

orchards or scattered trees. Naturally as time passes these trees will die and become a menace unless adequate steps are taken for their removal. To these steps immediate attention must be given and this society be made the medium for that educational work necessary to provoke public sentiment. With the fact established that all over Maine men are growing the very choicest fruit, we have abundant proof of what might be possible to all when equal care and protection is assured.

The State has spent millions in the past forty years to free the herds from the taint of tuberculosis and the people have paid the tax in order that the live stock industry might be saved and the product be clean and healthy. Let there be an outbreak of foot and mouth disease and the most drastic measures will be employed to check its progress. The State and municipalities are spending money lavishly to check and prevent the spread of contagious and dreaded diseases and they do well. Laws have been enacted and strengthened to insure that protection and their justice is recognized. Today we are discussing an industry worth to the State one and a half to two or three millions yearly and possible of almost limitless increase. Is that increase to be made certain or will we allow the industry to drift into smaller operations? Admitting what has been claimed, and it is difficult to see how any one can question the position taken, the lesson is obvious. If dead and dying trees are a menace to the owner, or others, if diseases multiply where these obtain and pests find room therein to increase, steps must be taken to free the State from the presence of all such breeding places.

Our chief competitors are the growers in the far west. Only their best apples are shipped across the continent to our doors but when here they sell for prices that stagger the average grower at home. What they do with inferior specimens we do not know or care but this we know that single states ship east yearly twenty to forty thousand carloads and these apples drive ours into the corners. Let me here make exceptions for there are men in Maine who by skill and thoroughness, and because of their location, are competing on the fruit stands with these showy western

apples and giving customers a quality never to be realized in the box fruit brought in. It is this fact which makes necessary the plea for such action by this society, and such united action by apple growers in Maine, as will make possible the same results for the great majority. No man living near an old orchard, or neglected trees, can grow the highest quality of fruit or the per cent needed to insure profit for the protection which must be given. If it be true that the small grower is to be crowded out it is but another illustration of the situation facing in all industrial lines. Mr. Blaisdell with his one hundred acres in apple trees can afford machinery and protection not possible, or profitable, to him with one hundred trees. Here is the trend of the industry and it is inevitable. It then becomes our duty to so safeguard our trees that we may eliminate to the utmost the pests and diseases. This can mean but one step and that the same as has been taken by those who successfully compete with us.

There must be placed on our statute books laws which will require the removal of all dead or diseased trees either by the owner, or the State, and their complete destruction by burning. Every such breeding place for pest or disease spore must be removed, whether along the roadside, in field, pasture, woods or on line fences. It is high time for the discussion of this question and the passage of such acts as will provide for the same protection as now given so freely the cattle, hogs, sheep and their products. Never have we had better illustration of this lesson than during the past few years when men in different parts of the State have, by reason of location, and the care given, been able to free their orchards from the multitude of pests and diseases which threaten injury and destruction of trees and fruit.

Here is a problem very vital to the best interests of the State and one which will require patience and wisdom that no injustice be done any one and the necessary end finally reached. It will be well if steps are taken during this session looking to the formulating of such a law as will be needed and then prepare to follow with a campaign of education necessary before decided action is taken. When the purpose of such legislation is appreciated there will be no

opposition from those who intend to continue in the business of growing good apples. There is no alternative, we must go forward to build up the industry or be content to see it dwindle rapidly in the next decade. The State, having given this organization financial aid, has the right to demand that we set the forces unitedly for the increase of the orchards. The experience of the past few years, the increased number and virulence of pests and diseases, render absolutely necessary such steps as will make for protection and save the industry. The burden of spraying is becoming a tax so heavy as to prevent fair returns to owners of small orchards, yet the lesson of 1923 is that more thorough work must be given next year. The importance of community service, full and complete, must be urged in season and out to aid those whose orchards will not profitably allow the introduction of necessary machinery for complete protection.

In a recent interview Ex-President Keyser said, "Fifteen years ago I thought three sprayings enough but that number now fails to keep off the scab. Six to eight are now necessary and this introduces the problem of economics. If an orchard is wanted to make money we cannot spray so many times. I cannot dust my orchard—1,200 trees—for less than \$25.00 each application. It is a big question among the orchardists of Maine." In my own work with practically 300 trees it cost me this year \$60.00 for three sprayings and two dustings. Scab spores are but one of many forms of disease we must fight and then comes the army of pests, the railroad worm being the most difficult to control when there are old or dead trees near. The cost of producing apples must be reduced not by less labor but more. When we talk about fifteen per cent scabby or diseased we are working at a loss, yet the man who is free to that extent is in the minority. When we reach one hundred per cent clean, as some have, we get an object lesson of tremendous significance. Here is our objective and the path to it is clear and must be followed by all. Hence the necessity for legislation to protect the whole body.

In 1906 the speaker was made a committee of one, by this society, to meet fruit growers in the other New England

states and bring about a sentiment for a uniform grading and packing law. After several years, meetings being held in different states, at Wilton, N. H., the representatives of the six states agreed upon a law which was purely educational and without teeth. It was the limit beyond which men would not then go. Then commenced the struggle for the law and the story of amendments since until we have what we are now working under. The other states have reached their present position by a somewhat different path though aiming at the same end. I submit, gentlemen, that we consider carefully whether our law should not be changed to accord with the requirements of the other states. To pack a barrel of Number One apples calls for clean specimens of specific size and color, and that is all right, but when for lack of size or some slight defect we brand them Number Two's we advertise an inferior grade. If we hold to the same conditions and brand them A, B and C we relieve from the suspicion born of the brand on the barrel.

Rules governing the grading and packing are right but they need be strengthened by larger appropriation for inspection and especially for educative work looking to greater uniformity in grading. Individual standards must be blended by official oversight that this desired uniformity may be promoted.

We have reached the stage where the tractor, high-power sprayer or duster, grader and auto truck become profit makers for the live orchardist. To make them such there must be larger operations or community service and to promote these is the mission of this organized body.

It is along these lines that it is called to serve the best interests of Maine and aid in multiplying the orchards, certainly in making possible the production of the maximum per cent of Number One apples. As we approach this we will have a dependable supply and no fears about the inferior western apple.

This society does not complete its service to the State when a yearly exhibition and a few field meetings are held, important as these are. It is the organized body of the fruit growers of Maine and as such must direct any and all measures for the permanent betterment of the industry.

The combination of conditions facing every grower force a study of the problem from an angle never met before and will make necessary such legislation as will minimize the difficulties in the path of the would be orchardist. Increased faith in the industry will be manifest only when we set our faces to the strengthening of the arm of the law for the more complete protection of the whole body of growers. The one question before us today is what measures will bring the desired end and how shall we proceed to make them available and effective, without injury to the smaller operator.

Mr. President and gentlemen, here is legitimate business for this society. No other body can assume our functions or perform our duties and the State society live. Whatever action for the good of the industry is indicated we must assume and direct. What we attempt as the result of deliberate consideration we can perfect. To this larger field of duties we are called and the call is imperative. Before the next Legislature convenes bills for the protection of the industry and the correction of the method of branding should be so freely distributed among the orchardists that each may be able to act in a manner not to cause later regrets. Gentlemen, it is up to us to move forward and set forces at work which in the immediate future will start new orchards on all our hillsides and put Maine at the head as an apple producing State with quantity unequaled and quality unexcelled."

Report of Committee on Resolutions,
MAINE STATE POMOLOGICAL SOCIETY.

I.

RESOLVED: That the members of the Maine State Pomological Society desire to express their appreciation for the courtesies extended to this Society by the Portland Chamber of Commerce, the Portland Farmers' Club, and the City Government; also to the press and to individual citizens of Portland who have materially aided in making the meetings both pleasant and profitable.

II.

RESOLVED: That the Society commends and thanks Wilson Conant for the painstaking effort he has made and for his accomplishments as a member of the Experiment Station Council, as indicated by the report presented this morning.

III.

RESOLVED: That this Society endorses and supports the work and policy of the Maine Federation of Agricultural Associations as shown by its accomplishments and program relative to the fundamental problems which confront the agricultural interests of the State.