The Connecticut Pomological Society

1903--1904

A gathering of Connecticut Fruit Growers. Field Meeting at "Orchard Hill Farm," Andover, September, 1903.

REPORT OF THE

Connecticut Pomological Society

FOR THE YEAR 1903

WITH

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING 1904

PUBLISHED BY
THE CONNECTICUT POMOLOGICAL SOCIETY
1904

Officers of the Connecticut Pomological Society

FOR 1904.

President.

PROF. ALFRED G. GULLEY.....Storrs.

Vice President.

JOSIAH M. HUBBARD.....Middletown.

Secretary.

HENRY C. C. MILES.....Milford.

Treasurer.

ROSWELL A. MOORE.....Kensington.

Vice County Presidents.

Hartford	George H. Hale	So. Glastonbury.
New Haven	Albert B. Plant	Branford.
Fairfield	William E. Waller	Bridgeport.
Litchfield	J. H. Putnam	Litchfield.
Middlesex	Roscoe H. Gardner	Cromwell.
New London	S. P. Sterling	Lyme.
Windham	L. O. Haskins	Scotland.
Tolland	C. H. Baker	Andover.

Standing Committees.

Legislation.

J. C. Eddy, Simsbury.
Edwin Hoyt, New Canaan.
A. C. Sternberg, West Hartford.

Membership.

Orrin Gilbert, Middletown.
E. M. Ives, Meriden.
Frederic Kelsey, Higganum.

Exhibitions.

Elbert Manchester, Bristol.
L. C. Root, Farmington.
E. R. Bennett, Storrs.

Injurious Insects.

Prof. W. E. Britton, New Haven.
Connecticut Experiment Station.
H. B. Buell, Eastford.
T. M. Savage, Berlin.

Fungous Diseases.

Dr. G. P. Clinton, New Haven.
Connecticut Experiment Station.
G. W. Spicer, Deep River.
G. A. Parker, Hartford.

New Fruits.

Stancliff Hale, So. Glastonbury.
G. C. Comstock, Norwalk.
J. H. Putnam, Litchfield.

Markets and Transportation.

J. H. Hale, So. Glastonbury.
J. N. Barnes, Yalesville.
J. T. Molumphy, Berlin.

Finance.

N. S. Platt, New Haven.
J. C. Eddy, Simsbury.
J. Norris Barnes, Yalesville.

Auditors.

G. W. Staples, Hartford.
A. B. Plant, Branford.

CONTENTS.

Constitution and By-Laws of the Society.

CONSTITUTION.

ARTICLE I.—The name of this Association shall be THE CONNECTICUT POMOLOGICAL SOCIETY.

ARTICLE II.—Its object shall be the advancement of the science and art of pomology, and the mutual improvement and business advantage of its members.

ARTICLE III.—Any person may become a member of this Society by paying into the treasury the sum of one dollar per annum. If the annual fee remains unpaid for two years, the membership shall cease and the name be taken from the role.

ARTICLE IV.—Its officers shall consist of a President, First Vice President, one Vice President from each county in the State, a Secretary, and a Treasurer, to be elected annually by ballot, to hold office for one year, or until their successors are duly elected.

The President, First Vice President, Secretary and Treasurer shall constitute the Executive Committee of the Society.

ARTICLE V.—The Society shall hold its annual meeting during the month of February, the time and place to be decided by the Executive Committee, at which time the annual election of officers shall be held, various reports submitted and an exhibition and discussion of fruits take place; also other necessary business be transacted. Other meetings for special purposes may be arranged for and called by the Executive Committee whenever it is deemed advisable. Printed notice of each meeting to be sent to every member of this Society.

ARTICLE VI.—The following Standing Committees of three members each, on the following subjects, shall be appointed by the President, to hold during his term of office; the appointments to be announced at the annual meeting of the Society:

Business and Legislation,
Membership,
Exhibitions,
Injurious Insects,
Fungous Diseases,
New Fruits,
Markets and Transportation,
Two Auditors.

ARTICLE VII.—This Constitution may be amended by a vote of two-thirds of the members present at any annual meeting.

BY-LAWS.

ARTICLE I.—The President, Secretary, Treasurer and the chairman of each standing committee shall each present a report at the annual meeting of the Society.

ARTICLE II.—The President shall appoint annually two members to audit the accounts of the Secretary and Treasurer.

ARTICLE III.—The Treasurer shall pay out no money except on the written order of the President, countersigned by the Secretary.

ARTICLE IV.—It shall be the duty of the Executive Committee to arrange the programs for the meetings of the Society, to fill all vacancies which may occur in its offices between the annual meetings, and to have general management of the affairs of the Society.

ARTICLE V.—The Committee on Legislation shall inform themselves in regard to such laws as relate to the horticultural interests of the state, and bring the same to the attention of the Society and also the need of further legislation. And when so directed by the Society, shall cause to be introduced into the General Assembly such bills as may be deemed necessary, and to aid or oppose any bills introduced by others, which directly or indirectly affect the interests of the fruit-grower.

ARTICLE VI.—The Committee on Membership, with the coöperation of the County Vice Presidents, shall bring the work of the Society to the attention of fruit-growers throughout the state and by such means as they deem best strive to increase the membership.

ARTICLE VII.—The Committee on Exhibitions shall suggest from time to time such methods and improvements as may seem to them desirable in the conduct of the exhibitions of the Society, as well as fruit exhibitions throughout the state; and with the assistance of the Executive Committee shall arrange the premium lists, and have charge of all Exhibitions given by this Society.

ARTICLE VIII.—It shall be the duty of the Committees on Insects and Diseases to investigate in regard to the ravages of these enemies of fruit culture; and to suggest how best to combat them and prevent their spread; to answer all inquiries addressed to them by the members as far as possible, and, when necessary, promptly lay before the Society timely information on these subjects.

ARTICLE IX.—The Committee on New Fruits shall investigate and collect such information in relation to newly-introduced varieties of fruits as is possible, and to report the same to the Society, with suggestions as to the value of the varieties for general cultivation.

ARTICLE X.—The Committee on Markets and Transportation shall inform themselves as to the best methods of placing fruit products upon the market, and bring to the attention of the members of the Society this and any other information concerning profitable marketing.

ARTICLE XI.—The Society will adopt the nomenclature of the American Pomological Society.

ARTICLE XII.—These By-Laws may be amended by a majority vote of the members present at any regular meeting.

PROGRAMME

Arranged for the Thirteenth Annual Meeting

TUESDAY, FEBRUARY 2nd

Morning Session, Opening at 10 o'clock

1. President's Address.
2. Annual Report of the Secretary.
3. Annual Report of the Treasurer.
4. Reports of Standing Committees.

Legislation, J. C. Eddy, Chairman.
Membership, Orrin Gilbert, Chairman.
Exhibitions, Elbert Manchester, Chairman.
Markets and Transportation, J. H. Hale, Chairman.
Injurious Insects, Prof. W. E. Britton, Chairman.
Fungous Diseases, Dr. O. P. Clinton, Chairman.
New Fruits, Stancliff Hale, Chairman.

11.30. Ten-Minute Paper—"How to Secure Clear-Skinned Fruit."
E. M. Ives, Meriden.

Discussion.

RECESS.

Afternoon Session, at 1:30

"Utilizing Rough Lands for Orchard Purposes."
J. H. Hale, South Glastonbury.

"Planting and Care of the Trees."
H. W. Collingwood, Editor *The Rural New Yorker*, New York.

Discussion.

2.45. "The Production and Marketing of Apples."
T. E. Cross, Poughkeepsie, N. Y.

3.30. Ten-Minute Paper—"What is the Future Outlook for the Peach Growing Industry of Connecticut?"
N. S. Platt, New Haven.

Reports from Growers on the Condition of Peach Buds.

Evening Session at 7:30

Lecture—"The Fruit Garden in its Relation to the Suburban and Farm Home."
PROF. F. A. WAUGH, Dept. of Horticulture, Mass. Agricultural College, Amherst.

Ten-Minute Papers—"The Advantages of a Map or Plan for Farms and Gardens and How to Make it."
G. A. PARKER, Supt. Keeny Park, Hartford.

"Co-operation and Cost of Production as Factors in Meeting Competition in Fruit Growing."
EDWIN HOYT, New Haven.

WEDNESDAY, FEBRUARY 3rd

Morning Session at 9:30

"FIGHTING THE SAN JOSÉ SCALE."

(a) "The Latest and Most Effective Methods."
PROF. W. E. BRITTON, State Entomologist, New Haven.

(b) "Some Extensive Spraying Experiments of the Past Season."
MR. E. R. BENNETT, Storrs Agricultural Experiment Station.

(c) "Cost and Results of the Work."
J. NORRIS BARNES, Yalesville.

Discussion.

10.45. Address—"Some York State Ideas in Successful Fruit Culture."
S. W. WADHAMS, Clarkson, N. Y.

11.30. Five-Minute Talks and Demonstrations by Students in Horticulture from the Connecticut Agricultural College.

RECESS.

Afternoon Session at 1:30

Election of Officers.

2.00. Address—"Cultivation vs. the Mulch System in Fruit Growing."
WM. H. SKILLMAN, President New Jersey Horticultural Society, Belle Mead, N. J.

Discussion.

2.45. Address—"Commercial Small Fruit Culture; and How I Grow Strawberries."
R. H. RACE, North Egremont, Mass.

3.30. Ten-Minute Paper—"Raspberries and Blackberries for Profit."
J. T. MOLUMPHY, Berlin.

Questions and Discussion.

Closing Business.

THE

Connecticut Pomological Society

PROCEEDINGS

OF THE

Thirteenth Annual Meeting

IN accordance with the provisions of the Constitution, the thirteenth annual meeting of the Society was held February 2 and 3, 1904, in Unity Hall, Hartford.

The meeting was called to order at 10.30 o'clock Tuesday morning, February 2d, by the President, Prof. Alfred G. Gulley of Storrs.

The session opened under the most auspicious conditions, a large representation of the members of the Society, besides numerous visitors, being present.

Immediately upon the opening of the meeting President Gulley delivered his annual address as follows:

PRESIDENT'S ADDRESS

Members and Friends of the Connecticut Pomological Society:

We are again assembled for our annual interchange of ideas and experience, and I trust the importance of the session will at least equal that of its predecessors. The Secretary has prepared a good program; still this is only a leader to the discussions which bring out fully the experiences of the speakers and others, and that experience can be obtained best by freely asking questions by those desiring information. To our friends from a distance, we tender a hearty welcome, and invite them to take part in these discussions, and share all the good things of the meeting with us.

The past season has been one of abrupt and marked changes from normal conditions, with results fully as marked. The loss of the peach crop by the sudden freeze of last winter, predicted by President Platt in his address of a year ago, was fully as great as anticipated. Connecticut had but few peaches to sell. Winter was succeeded by an unusually early spring, which caused all fruit trees to bloom much in advance of the average date. During the time of bloom came the dreaded frost to be expected at that early season, but in case of the apple, at least, without the expected result of totally killing the blossoms. It might be said that the rather heavy blooming of apples was of itself rather unexpected after the enormous crop of 1902. As a further development, just with the planting season commenced the unprecedented drouth of over fifty days with less than one inch of rainfall, and this again followed by wet and cool weather a great part of the remainder of the growing season, completing a year which as a whole has been very unsatisfactory to the general farmer and fruit grower.

In addition to the very unusual season the fruit grower also had another experience, not unknown before, but much more severe than usual, in the continued presence of plant aphis, or plant lice, on trees, particularly young apple and pear trees. On many orchards set last spring they almost entirely checked all growth and put them back a full year, if indeed they did not weaken the trees to such an extent that the latter will not survive the extreme cold of the present winter. There is some encouragement to believe that the pest will not be as serious the coming summer.

As a slight offset to these drawbacks was the partial apple crop already referred to, and for which good prices were obtained; this last also applied to all horticultural products of the year. From this apple crop, the most important information derived, aside from effects of frost upon bloom, was the fact that the largest crops were from orchards that have had good care the several previous years. Uncared for trees, as a rule, bore but little fruit, indicating that continuous good care will, to a certain extent, overcome the biennial-bearing habit. In this connection it may be stated that substantial progress has been made, the past season, in the use of the box as an apple package. In nearly all sections its increased use is reported, and usually with profit. There is not yet that uniformity of

size or shape that would be desirable. Another year or two will probably be required to determine just what is wanted.

Probably the most interesting occurrence of the season was the remarkable second crop of strawberries. Without question that is the most noticeable freak of that valuable fruit since it has been under cultivation. It was not confined to New England, but occurred all over the northeastern United States where strawberries are grown. To account for this second crop, which, in some sections, and on some varieties, almost equalled the usual one, many reasons have been advanced, none of which it seems to me to definitely explain it, nor can I add anything to make it more clear. It is safe to say that years will elapse before New York market reports will again regularly quote home-grown strawberries in September and October; or that such an exhibit of this fruit will be found at our annual fair as was on the tables at Berlin last fall. Probably the most interesting question to arise from this peculiar crop is as to the effect upon the product on those bearing beds next season.

The San José scale is still the leading insect topic discussed by the horticulturist. But we have the assurance that extensive experiments made the past season have demonstrated that the insect *can* be *controlled*, if not eradicated, with reasonable outlay, but that only the thorough operator will be successful. The details of this work will be presented later in the session.

The Louisiana Purchase Exposition Commission of Connecticut placed the preparing and making of the pomological exhibit from this State in the charge of this Society, and placed at its disposal funds for the purpose. To make that display there has been collected and is now in cold storage something over 100 barrels of apples, which will be used during the earlier part of the Exposition. This collection embraces the principal valuable varieties grown in the State, and will be supplemented by fruit of the coming season as soon as mature. Visitors there will be able to compare our New England apples with the home-grown fruits of the land of "the big red apple" and upon its own territory. I trust the comparison will be favorable in all respects for eastern-grown fruit. The annual exhibitions of this Society have become one of its most important features. Under the present plan of holding them in connection with the fairs of other regular organizations of the State, they are proving great sources of education and pleasure.

That they are becoming valuable and popular is evident from the interest exhibited by visitors, and from the fact that the Society has already received good offers to hold its exhibit next season in connection with some of the largest fairs in the State. That they are needed is demonstrated by the showing, each year, of even old and well known varieties of fruits under wrong names. These errors are corrected and the growers prevented from unintentionally disposing of fruit wrongly named. The wide-spread desire for information along pomological lines is demonstrated by the increased call for Institutes all over the State. This demand was met by the Society last year as far as its means would permit. By a plan recently adopted it is hoped that the information spread by these meetings will be increased until the whole territory of the State is covered.

Brother fruit growers, the unfavorable conditions of the past season should not discourage us. Even the dark outlook for the Connecticut peach grower for the coming year will bring with it some valuable lessons for future use. It is certain that the fruit-growing industry is making rapid and favorable progress in the State. Nor do I think we need to be disturbed by the large increase of orchard planting in other sections each year. Possible over-production has long been a bugbear, yet it seems as far away as ever. Increased demand from greater use and better means of distribution promise to dispose of increased product for some time to come, and the thorough grower who gives close attention to the disposal of his products is probably as sure of profits, although perhaps not as great, in the future as in the past.

President Gulley—Next in order will be the annual report of the Secretary, H. C. C. Miles.

Before reading his report, Secretary Miles said: "As you all know, our President is nothing if he is not brief and right to the point; and in getting up this program he and I agreed that brevity should be a leading feature; that is, we agreed to leave out none of the essentials but so far as possible we would endeavor to be brief. In preparing my report to read to you this morning I tried to follow that idea, but there are so many things to report upon, it was not a question of what I should leave out, but what ought to be put in."

SECRETARY'S REPORT

Mr. President and Fellow Members of the Pomological Society:

We come together in this our thirteenth annual gathering, to listen to reports of the work of the past year, to discuss the problems before us as fruit growers, and to plan for the future.

The year just closed was one full of disappointment and unsatisfactory returns for fruit growers generally, and those of our own State in particular. Characterized by very unfavorable weather conditions, as well as serious attacks of insects and diseases, it must be recorded as a season of poor crops of most of our standard fruits.

But the failures of a single season have not discouraged our Connecticut growers; on the contrary, profiting by such unpleasant experiences, they seem to have taken fresh courage and are planning wisely for the future with the expectation of reaping more satisfactory results and greater profits, yet realizing that the lot of the fruit grower of the present day is far from being one of certain or easily attained success.

With our Society, however, it has proved a year of continued prosperity and growth.

Discouragement on the farm and in the orchard has not lessened the interest or enthusiasm of our members in the work of the Society, and I believe we are to-day stronger than ever before,—stronger in numbers, stronger in helpful influence, stronger in equipment for work, and stronger in the respect of the general public of the State.

I congratulate you upon the fact that Connecticut has such a splendid organization devoted to her horticultural interests —an organization ready to protect and work for those interests, which are so rapidly increasing in extent and importance.

It was, indeed, a compliment to our Society that it was recognized by the Connecticut Commission of the St. Louis Exposition and that the matter of a fruit exhibition from Connecticut at the Exposition was placed in its charge.

I have to report to you first, on the condition of

Our Membership.

To keep its membership *growing* is of *first* importance in any organization, but especially in a Society like this.

Our growth has been gradual, steady and strong from the very beginning, thirteen years ago, and the past year has been no exception.

From February 1, 1903, to February 1, 1904, we have gained *135* new members; 5 have died or withdrawn; 38 memberships have not been renewed for the past two years, and under the rules of our by-laws we are not allowed to longer count them as members. After making all these deductions our present total membership is *567*, a net gain of *87* members over the number I reported to you last year, which was 480.

In making this substantial gain the efforts of your officers have been ably seconded by the work of the Membership Committee, and again I wish to express my appreciation of their valuable services and especially their willing sacrifice of time and money.

We have embraced every opportunity to bring the purposes and work of the Society to the attention of the farmers and all others who are, or ought to be interested in fruits, and urge their membership.

Perhaps some may think we have pressed this matter too strongly, but it is a fact that in order to *live* we must *grow*, and new members are the fresh life of the Society, and undoubted evidence of its growth.

Therefore, we want *more members,* because more members will mean larger funds for better and more extensive work, and give us greater opportunities for carrying the benefits of the organization into every corner of the State. Then let us continue the "campaign" until we number among our members every cultivator of fruits in Connecticut, and let me suggest that each one of our present members resolve to bring into the Society this year at least one friend or neighbor. If we do this, I am sure we shall find it mutually profitable.

From February 1, 1903, to February 1, 1904, I have received and paid over to the Treasurer, $495.95.

From membership fees	$483.00
From sale of exhibition fruit	12.95

Orders have been drawn for the payment of bills to the amount of $1,770.10, besides the distribution of $507.08 in premiums awarded at the annual exhibition, and $12.50 for premiums at the last annual meeting.

While we have been able to meet our expenses with our present income, still our funds are none too large and our treasury seldom shows much of a balance on hand at the end of the year. But we believe we can show *results,* and that is really what we want for the money expended.

Our Meetings.

Since the annual meeting last February, the Society has held, during 1903, eighteen meetings. Twelve of these were institutes, held by invitation of the following Granges: Madison, Watertown, Winsted, Deep River, New Canaan, Ellington, Prospect, Easton, East Canaan, North Haven, Collinsville and Southington. Five were summer field meetings, and one the annual fall meeting and exhibition in September. All these various gatherings were largely attended, full of interest and enjoyment, and we believe were worth to the people of the State, and to our members especially, many times their cost.

The institute has come to be recognized as one of the best agencies for reaching the masses of farmers and carrying to them the latest results of scientific investigation and practical experience.

The institute work of this Society still continues one of its most popular features, and as showing the demand for it throughout the State, I may say, we received last year twice as many applications as we could accept, because of lack of available funds and sufficient time.

In this connection, I should perhaps state, what is already known to most of you, that institute work in Connecticut is being conducted on a somewhat different plan this winter.

Acting on the suggestion of this Society, the State Board of Agriculture, the Dairymen's Association, and the Pomological Society, are combining their institute forces and have planned a schedule of meetings, jointly. The cost of the work is to be divided between the three organizations.

While it is expected that, in the absence of any State law in the matter, this plan will prove to be an improvement over the old order, still we can but hope that the near future will

develop a properly organized institute system, thus placing Connecticut among the list of States that have carried this important educational work to perfection.

Our series of field meetings last summer, although a little late in beginning, were all very successful and called out a larger attendance than ever before. Starting August 7th, with the shore-outing at Branford Point, coupled with a very interesting visit to A. E. Plant & Son's splendid farms and orchards; —meeting again on August 26th in an enjoyable Field Day at Higganum as the guests of that hospitable Grange;—then on September 4th accepting the invitation of Brother J. H. Hale, it was made the occasion of a big field meeting at his South Glastonbury farm, nearly 400 enjoying the many good things Brother Hale knows so well how to provide;—still another successful day at Orchard Hill farm, Andover, on September 15th, at the home of Mr. C. H. Baker, one of our new but enthusiastic members, and lastly the meeting with Wethersfield Grange, when we united with the Dairymen's Association and held, in spite of the rainy day, an extremely profitable session.

Our hearty thanks are due to those who thus entertained the Society and by whose kindness our members were afforded so many pleasant outings.

Our sixth annual fruit exhibition was again held in connection with the Berlin Fair, September 23–24. The Executive Committee decided in favor of Berlin after receiving and considering offers from several other towns. The exhibit, as a whole, was fully up to the standard of previous years; and, considering the scarcity of good fruit last season, in the number of entries and the generally fine quality and appearance of the fruit shown, the exhibit was highly creditable to the fruit growers of the State. Over 1,200 plates were shown by 75 exhibitors, 70 of whom were awarded premiums amounting in all to $515.75.

Our annual fruit shows are certainly proving "eye-openers" to the people, especially in the matter of showing what fine products may be grown in Connecticut, and to those growers who attend them they are wonderful educators. The fairs of the State are beginning to recognize the advantages of such an exhibit on their grounds, and it is safe to say we shall not be troubled to find ways and means for holding our exhibitions in the future.

Your Executive Committee has met frequently through the year, whenever the business of the Society demanded. Under their supervision the annual report of some 230 pages, packed full of up-to-date pomological wisdom and experience, was prepared and issued to the membership in the early summer. Hereafter it will be more desirable if this report can be sent out earlier. The Executive Committee believe an arrangement can be made so that in the future the report will reach members with the opening of spring and be at hand when most needed by the working fruit grower.

Among other lines of work of the past year was the gathering of statistics for crop reports, continuing the important work started two years ago. Although the results were not as valuable as in a year of heavy crops and glutted markets, yet as a matter of future reference the work proved to be entirely worth while, and incidentally the growth of the fruit industry of the State, as evidenced by the planting of new orchards, was brought out. Provision for continuing this branch of the work from year to year should be made. I may add that a more general response on the part of the growers, where figures are asked for, is necessary to the full success of such a census.

As far as future work for this Society is concerned, probably nothing is of greater importance than that we should strive to bring about a closer union of our fruit growers, especially in fighting common enemies and in applying better methods to the marketing of our products. By common enemies I refer to such as the San José scale, acknowledged by those who know, to be the greatest problem on our hands to-day, and in controlling which we ought to be mutually interested. Also we should realize the value of our organization when applied to the market end of our business.

Connecticut is a small State, and in the extent of her orchards and vineyards is not to be mentioned in the same class with those vast areas devoted to fruit in our western country, but she can excel in *quality,* if not in *quantity,* and the time has come when her growers must apply coöperation and business methods in the grading, packing, shipping and selling of their fruit crops. We are *planting* and *growing* along advanced lines, but do we know how to *sell* to best advantage? I believe we

should keep this subject uppermost in our discussions, until some practical plan is devised and put in operation.

In conclusion, we have built up a Society that we may well feel proud of as a State organization. Let us guard our good name and the interests we represent, push on with unabated enthusiasm, interesting others in the work, and extending our efforts wherever possible, ever keeping in mind the motto "We have not done our best yet."

With thanks to all who have so kindly assisted me in my busy office, this report is

Respectfully submitted,

H. C. C. MILES, *Secretary.*

The report of the Treasurer, R. A. Moore, was next called for.

Mr. Moore presented a report of receipts and disbursements for the past year, of which the following is a summary:

TREASURER'S REPORT

FOR THE YEAR ENDING FEBRUARY 1ST, 1904.

1903.	*Receipts.*	
Feb. 1.	By cash on hand	$ 63.36
	Received from Membership fees	483.00
	" from State Appropriation	1,093.54
	" from State Board of Agriculture (Bounty on Fair Premiums)	182.77
	" from Sale of Exhibition fruit	34.35
	" Barnes Bros. (Plates in Annual Report)	2.00
		$1,859.02
1903.	*Expenditures.*	
Feb. 1.	Expenses of Annual Meeting 1903	$254.74
	" Secretary's office	92.14
	" Treasurer's office	7.24
	Publishing and distributing Annual Report	464.05
	Expenses of Fall Exhibition	113.31
	Premiums paid, account Fall Exhibition	507.08
	Premium paid, account Annual Meeting	12.50
	Expenses of Institutes, season 1903	168.31
	" Field Meetings	50.58
	Miscellaneous printing, postage and stationery	71.60
	Sundry expenses	58.63
1904.		
Feb. 1.	Cash in Treasury	58.84
		$1,859.02

This certifies that we have examined the books of R. A. Moore, Treasurer of this Society, and have compared the vouchers with the Treasurer's accounts and find the same correct.

Signed, GEO. W. STAPLES, A. B. PLANT, } *Auditors.*

HARTFORD, Feb. 2, 1904.

A MEMBER: Mr President, may we ask a question? Where does this money come from under the heading of "State Board?"

TREASURER MOORE: From the State Board of Agriculture.

A MEMBER: Does it come from their regular appropriation?

TREASURER MOORE: I don't know what appropriation it is taken from; it comes direct to us as a bounty from the State to societies holding fairs and exhibitions and awarding premiums. Now I would like to make a few remarks on this. The Pomological Society last year held its exhibition in connection with the Berlin Fair, and the Berlin officials had to be on the lookout to keep gamblers away. They would come in, innocently look around, and pretty soon we would discover gambling. But in every case we stopped them. Now I know of certain fairs in the State that provide for selling liquor and gambling. They tell me of one Society which takes in more than $1,400 in this way.

A MEMBER: Do you know this to be true, Mr. Treasurer? Why don't you make complaint to the Secretary of the Board of Agriculture?

TREASURER MOORE: Well, I did not know it at first. But the matter was laid before the Attorney General and he said it would be a very hard thing to prove and he advised the State Board to pay the money. So much for that.

MR. HALE: We have got a large Society and we are doing a lot of good work in the State and we are also spending a good deal of money. Would it not be feasible to have the Treasurer and Secretary go through those figures and report to us in a lump sum how much our annual meeting costs us, how much our field meetings cost, and also our exhibitions, etc. Give it to us under three or four heads. It can be done by the Secretary and Treasurer better than by anyone else. I wish they might do so.

TREASURER MOORE: Do you want this before the meeting closes?

MR. HALE: Sometime before the session is over.

SECRETARY MILES: I have been thinking over this very point, and commencing January 1st, 1904, I have classified our expenses somewhat so that it will be a very simple matter in future for the Treasurer and Secretary to report as has been suggested. Mr. Moore, our Treasurer, on his books, I presume, does not state what an order is drawn for; in making payment he simply states the amount and to whom. Of course, on my books I record what the order is drawn for.

MR. HALE: Mr. President, would it not be in order to accept these reports and place them on file?

On motion of Mr. Hale the Secretary and Treasurer's reports were then accepted and ordered placed on file.

The Auditing Committee reported through Mr. Staples, the Chairman, that the books of the Treasurer and Secretary had been examined and found correct.

THE PRESIDENT: We will now take up the reports of the Standing Committees: first the Committee on Legislation, Mr. J. C. Eddy, Chairman.

Report of Committee on Legislation.

Mr. President and Members of the Connecticut Pomological Society:

At the last annual meeting the Legislative Committee were instructed to represent the Society before the Legislature then in session, in regard to several matters of interest to fruit growers.

First, was an amendment to an Act Concerning Insect Pests, requiring the shipper of any nursery stock into this State to furnish a certificate that the stock had been fumigated. The amendment and Act is as follows:

(See Public Acts, 1903, page 39, chapter 88.)

Another matter along the same line was an amendment giving additional powers to the State Entomologist as follows:

(See Public Acts, 1903, page 59, chapter 125.)

As per vote of the Society your Committee drew up a bill increasing the appropriation for the Pomological Society to

$1,500 per year. Your Committee, with several of the officers and other prominent fruit growers, appeared before the Appropriation Committee, and were accorded a full hearing, but failed to convince the Appropriation Committee that the increase was necessary; therefore, the amount appropriated by the State remains at $2,000 for the two years ending September 30th, 1905.

(See page 161, Special Laws, number 451.)

This is not an annual appropriation, but must be brought up again before the next Legislature, to retain even the $1,000 per year. It will be time enough to arrange for this at the next annual meeting, but it must not be overlooked at that time.

As is generally known, the last Legislature appropriated $100,000 for State representation at the Louisiana Purchase Exposition: $18,000 of this sum was assigned for the agricultural interests, to be used in making a suitable exhibition of the products of Connecticut. The different agricultural interests of the State came to an agreement as to the relative amount of money needed by each to make a suitable exhibition. This schedule was practically adopted by the Exposition and Appropriation Committees and passed by the Legislature.

Our Society has $4,000, which will no doubt be used to make a creditable showing of the pomology of the State, as our President, Treasurer and Secretary have the matter in charge.

The bill to regulate the selling of home-made wine was passed, but owing to some doubt as to the exact effect of a few words, was not approved by the Governor.

Respectfully submitted,

J. C. Eddy,
Edwin Hoyt,
A. C. Sternberg,
Legislative Committee.

On motion it was voted to accept this report and place it on file.

President Gulley: We will now listen to the report of the Committee on Membership by Mr. Orrin Gilbert, Chairman.

Mr. Gilbert: Mr. President, and members of the Pomological Society—I think it is not necessary for me to make any extended report after listening to our Secretary's report,

for he has said nearly everything I could say. I would add your Membership Committee feels that the best and almost the only way we can get members is to advertise the work of the Society. Many of you very kindly furnished us, three years ago, with a goodly list of names for the mailing list and I think the Secretary has every year sent a copy of our program to those addresses. I believe we have something like 28,000 farmers in the State and we have less than 600 members on our list, so you see our work is only just begun. And the reason we have not sent more advertising matter is because we have not had more names. I would like to suggest to the members that we would like every one of the 28,000 farm owners to be on our list if we could get them, and I assure you the Secretary will send each of them a program. I don't know of anything more I can say.

SECRETARY MILES: Mr. President, I think Brother Gilbert might have said a little more if he had not been quite so modest. I want to make known to the Society at this time that our advertising work has been materially helped by contributions from Mr. Gilbert's pocketbook. I want to make a motion that the thanks of the Society be extended to Mr. Gilbert.

MR. HALE: I would like to second that motion and amend it by making Mr. Gilbert a life member of the Membership Committee.

PRESIDENT GULLEY: You always want too much, Mr. Hale.

MR. HALE: The everlasting prodding Mr. Gilbert has kept up has resulted in nearly 600 members; and, do you know, Mr. President, that out of the forty-five States of the Union only three States have societies with a larger membership?

A MEMBER: I second that amendment.

Motion and amendment passed.

MR. GILBERT: I think this Society is too generous. You are loading me with a "white elephant." I don't know how I shall be able to carry it.

PRESIDENT GULLEY: We will now have the report of the Committee on Exhibitions by Mr. Elbert Manchester.

MR. MANCHESTER: Mr. President, ladies and gentlemen,—It seems to me it is hardly necessary that any report be made after what you have heard from our Secretary. Our annual exhibition was very nearly the same as the year before, and

so our report will have to be quite similar. The fair was held in the same place and under very much the same conditions, the Berlin people furnishing us with a tent and equipping us in every possible way. I think we rented 1,000 plates, besides some 200 more the Society already owned. Still, we didn't have plates enough.

They said it was an off-year for fruit, but from the amount brought in and the way our tent was filled it seems to me it was no off-year in Connecticut, although I know in many places the fruit was very light and very poor. In some lines we had but little fruit shown, especially in the peach class. Only a few plates were presented, but these were of high quality.

There are one or two suggestions I would like to make to benefit those who may be on this Committee in the future, and that is that all exhibitors should bring in their fruits at least one day before the commencement of the fair. This is necessary, especially in so large an exhibit, in order that the Committee may have time to get them arranged and ready for those who are to examine them, and also that the judges may act at once.

I don't know that there is anything special I can say further than this.

This report was accepted by vote of the Society.

The report of the Committee on Injurious Insects was presented by Prof. W. E. Britton, the State Entomologist, of New Haven.

Report of Committee on Injurious Insects.

It is customary for this Committee to present at this time a general review or survey of the season, as regards fruit insects. Unquestionably the most prominent feature of the past year in this respect was the great abundance of the green apple aphis or plant louse, *Aphis pomi* De Geer. This pest attacks chiefly the under surface of the leaves and the stems of the new shoots, causing the leaves to curl and noticeably checking the growth. The lice could be found also on the old leaves, but were more abundant on the new ones, where the tissues are softer and more succulent. They attack not only orchard trees but also the young trees in nursery rows, and much of the apple stock in the nurseries this year is below the usual size on account of the injuries caused by this aphis. In one large

nursery the tops of the trees were dipped in kerosene emulsion to kill the lice, and though the treatment was successful, the species multiplies with such rapidity that trees were again soon covered. Most nurserymen declare that they cannot afford to do any spraying work in their nurseries, and consequently the trees are considerably dwarfed by the aphis. We found that spraying the trees with, or dipping them into, common soap and water (1 lb. in 6 gallons) would kill all plant lice with which the mixture came in contact. The apple aphis passes the winter in the egg stage on the twigs, and last winter these eggs were very abundant. I have not observed so many this winter. The eggs are oval in shape, black and shiny, and are glued around the buds.

Plant lice were also abundant on plum, cherry, currant and in fact nearly all other kinds of plants. The protracted drought in spring doubtless favored their multiplication, and later a black fungus grew in the honey dew given off by the aphids, making the trees look as if they had been scorched. Natural enemies were at work, however, as aphis lions, syrphus flies, and lady beetles were abundant everywhere feeding upon the plant lice.

The pear psylla *Psylla pyricola* Först. was a scourge to the pear trees in southern Connecticut, and specimens were received from various parts of the State indicating that it was also severe elsewhere. This insect, which has been mentioned several times in previous reports of this Committee, injures the trees by sucking out the sap from the leaves and tender shoots, like the plant lice to which it is closely related. It gives off honey dew and is followed by the sooty fungus in the same manner. Trees that are badly infested and not in full vigor shed many or most of their leaves during July and August. As the pear psylla is a difficult insect to combat, most fruit growers make no attempt to control it. We found, however, that a large proportion of the nymphs and some of the adults could be killed by careful spraying, even in July, with soap and water (1 lb. in 4 gallons).

The San José scale-insect has increased with great rapidity during the season, and the severity of the winter, which killed the peach buds and the injured trees, seemed to have no unusual effect on these insects. In fact, a much larger percentage survived than was the case the preceding winter. Fifty-six new

infested localities have been discovered during the year. Something like 40,000 trees in Connecticut have been sprayed with the lime and sulphur mixtures during the past season. The results were generally satisfactory. To go into details here regarding the treatment against this insect would be to anticipate the subject which our Secretary has given a place on the program of this meeting.

It has not as yet been possible to obtain from the authorities at Washington any of the Chinese lady-beetles for Connecticut, though the application was made more than two years ago and has been several times renewed.

The tent caterpillar, *Clisiocampa americana* Harr., was abundant throughout the northern and central portions of the State, in some sections the nests being extremely common. Many of the caterpillars died, however, before reaching maturity, according to reports received by your Committee too late to examine material to ascertain the cause of death, though the circumstances indicated the presence of the bacterial disease which is known to attack the caterpillars.

The injuries from the codling moth, *Carpocapsa pomonella* Linn., were about what we expect each year, and the apple maggot, *Rhagoletis pomonella* Walsh., was very destructive in some sections of the State. This latter insect is a difficult one to control as it is out of the reach of sprays and we must rely upon the choice varieties and the destruction of infested fruit. The codling moth can be controlled by spraying with the arsenites.

The seventeen-year locust or periodical cicada was expected to make its appearance in Connecticut during the season, but I have been unable to obtain a single record of its occurrence, though it has been reported from Rhode Island.

Two new beneficial insects have been brought into the State, which we hope may prove of considerable value, as they feed upon other insects, chiefly injurious ones. Both belong to the order *Orthoptera*, and the family *Mantidæ*. The European Praying Mantis, *Mantis religiosa* Linn., is about 2½ inches long, green or brown in color, and has become firmly established in the vicinity of Rochester, N. Y. It was, probably, introduced from Europe in shipments of nursery stock. The Chinese Mantis, *Tenodera sinensis* Saus., has evidently been accidentally introduced into Connecticut, as egg-masses were

found near New Haven, in the fall, after spring importation of plants from Japan. Another egg-mass was found in the same locality last summer. This insect has also been introduced accidentally into New Jersey and Pennsylvania, and has become well established near Philadelphia. The Chinese Mantis is about four inches long, and when young feeds voraciously upon plant lice. Both of these insects rest upon the leaves and stems of plants and trees, and devour caterpillars, and other insects that happen to come along. A number of egg-masses of each have been procured, and these will be distributed in Connecticut. Some will be hatched in the greenhouse, where observations can be made upon their habits and life stages.

In bringing this report to an end, your Committee desires to call attention to the fact that certain criticisms have been made of the Connecticut Insect Law. I refer particularly to the report of the legislative committee of the American Association of Nurserymen published in the *National Nurseryman* for October, 1903. Some of you have read the article. The point of the argument is that any law obliging nurseryman outside of our State to fumigate their stock before sending it into this State, which does not require the same treatment of Connecticut-grown stock, would probably be ruled as unconstitutional by the courts as an attempted regulation of interstate commerce. If our law is liable to be attacked on these grounds, would it not be well to instruct our Committee on Legislation, even at this meeting, to plan for such changes and amendments in the law at the next session of the Legislature as seems best to remedy the defect? There is much to be said in favor of a law compelling all nurserymen to fumigate certain kinds of stock: but other kinds should be exempt. The Chairman of your Committee, who is also State Entomologist and is in charge of the inspection work, will be glad to confer with your Legislative Committee, or with any nurseryman or fruit grower, regarding the proposed changes, in order to put our law in the best possible shape for the purpose for which it was enacted—the protection of our pomological interests.

Respectfully submitted,

W. E. Britton, New Haven, *Chairman.*
E. R. Bennett, Storrs.
J. M. Whittlesey, Morris.
Committee on Injurious Insects.

The report of the Committee was duly accepted.

PRESIDENT GULLEY: I notice Mr. J. H. Hale in the room now. We would like to hear a report from him for the Committee on Markets and Transportation.

MR. HALE: As to the market, why, the market for 1903 was right here, but we fruit growers didn't have any fruit to supply it with. Therefore, we did not have any need to bother with transportation matters.

I have recently, or just before the great freeze, been in conference with the general freight agent of the N. Y., N. H. & H. R. R., and he stated if we were to have an extensive fruit crop in Connecticut this year, he would like to have us as early in the season as possible make a reasonable estimate of how much there might be from the different stations and then notify the railroad company, that they might have opportunity to prepare for cars. He stated that in 1901, when we had a large crop, they did not have notice enough to handle it right. This is a comparatively new industry and we should every year give them plenty of notice. It is also probable that the rates will be somewhat higher in the future than in the past. It is claimed that in the past the way the railroad company has handled the fruit has not been at a profit to themselves. A railroad company is not a charitable institution and it must pay dividends to the stockholders. But they will be glad to coöperate with us at reasonable rates.

Report of Committee was accepted.

Next in order came the report of the Committee on Fungous Diseases, which was presented in an excellent paper by the Chairman, Dr. G. P. Clinton, as follows:

Report on Fungous Diseases of 1903.

The Committee on Fungous Diseases makes the following report for the past season. There are included in this account those troubles that have been especially prominent; those that are new or unusual, and brief mention of important diseases that have been less conspicuous than usual. There are also included two or three troubles that are not of fungous origin.

The season of 1903 was in many respects an unusual one

as to weather conditions, and these usually resulted unfavorably rather than favorably to plant growth. On December 9, 1902, occurred the sudden zero weather following an open fall. The first manifest injury was the discovery of the dead peach fruit buds; later it was found that fruit trees, especially the apple and peach, had also suffered. Then there was a very wet April, a dry May, and a wet June. These extremes had pronounced effect on germination and subsequent plant growth, with also some effect on the development of fungous troubles that start during these months. July and August were months of fairly good weather, though the middle of August had its blight week for the potato, and both months were too cool and moist for melons. September developed the gale that relieved many of the trouble of picking their apples, pears and quinces. The season was ended with late killing frosts, thus atoning somewhat for its backwardness. On the whole, the year was one very favorable for the development of bacterial troubles and perhaps up with the average for its allotment of those of a fungous nature. Let us briefly consider those occurring on our most prominent fruits.

Apple.

Black Rot (*Sphæropsis Malorum*). This is responsible for cankered areas on the larger branches and for the death of the young twigs. The rot of ripe fruit is also often due to it. On the foliage it causes roundish brown spots. An examination of leaves from a good many localities during 1902-3 showed that this was largely responsible for the leaf spot that has been so common. The same kind of spots, however, may be produced by spraying, under some conditions, especially when insecticides are used with Bordeaux or used alone.

Blight (*Bacillus amylovorus*). The bacterial blight that kills the young twigs during spring and early summer was evident the past year. These dead twigs have much the same appearance of those killed by the preceding fungus, but can usually be told by the blacker color. The germs of this disease are carried by the bees in their pollination excursions. This was illustrated in a young orchard at Shaker Station, where the blight was most evident in the trees nearest where bees were kept.

European Canker (*Nectria ditissima*). As a result of the field meeting at Andover, specimens were secured for the first time of the European Canker. It has also been reported elsewhere. The fungus causes curious distortions of the branches, that enlarge from year to year as a result of injury to the new wood. The trouble is to be looked for in older orchards. Proper pruning and painting of cut surfaces should control it.

Rust (*Gymnosporangium* sps.). The dry May was unfavorable for infection of apple leaves by cedar rusts. It seemed to be less prevalent than in the preceding year. The preference these fungi show for certain varieties was shown by a visit to a local nursery. The Wealthy and Fallowater were badly rusted, but the other varieties, side by side with these, were free.

Scab (*Ventura inæqualis*). May is also a very critical time for the first infection of scab. A wet, cold month is the ideal condition for its development, and this is what we did not have this year. The wet June, however, was favorable for its spread. On the whole, scab seemed not so abundant this year as last.

Baldwin Spot is a trouble that shows as small sunken spots on the exterior of the apple, or as discolored patches scattered within the flesh. It is now generally believed not to be of fungous origin, but possibly due to the collapse of the tissues as a result of the loss of water. This puts it among the physiological troubles. The bruised condition of apples, as a result of the September gale and the generally unfavorable season, were probably factors in making this trouble more serious than usual.

Winter Injury. The most serious trouble of the apple the past year was that due to the December freeze. The general effects can be but briefly indicated here. In nurseries, especially where trees went into the winter in an unseasonable condition due to the late fall coupled with late cultivation, the injury was most severe. Often the trees were killed outright or so severely injured as to be of little value. Curiously, the injury was usually confined to the wood, the bark and cambium remaining uninjured. The wood showed this injury by the dark color it assumed, which was in striking contrast with the healthy wood that was developed around it during the season. When such trees were transplanted, the unfavorable weather

conditions of an alternately dry and wet spring finished the career of many. In the commercial orchards, on the other hand, the winter injury to the trees showed itself in another way. On trees usually from four to twelve years, the bark and cambium were killed in patches, usually at the base of the tree and most frequently on northern exposures. These dead, irregular areas were sharply marked off from the uninjured bark, usually by a fissure. Most frequently they formed an elongated area extending upward for a foot or two. In some cases they completely girdled the trees. Such trees, if not examined carefully in the spring, looked all right and put out an abundance of foliage. In July, however, the leaves began to drop and the injury became very evident. The writer saw one orchard that was practically ruined. The owner did not discover the injury until the leaves began to drop in July. He was so impressed with the character of the injured bark and the suddenness of the appearance of the trouble, that he half suspected that some enemy had poured chemicals on the tree trunks.

Currant.

Anthracnose (*Glœosporium Ribis*). The most troublesome fungous pest of the currant in Connecticut is anthracnose. Not infrequently one sets bushes that have been completely defoliated by August. As it is a trouble that is said to yield to proper spraying earlier in the season, much of the injury could be averted.

Gooseberry.

Powdery Mildew (*Sphærotheca Mois-uvæ*). One of the most serious troubles of the gooseberry is the powdery mildew. Very curiously it has never been discussed in the Reports of the Connecticut Experiment Station and there exist no specimens of it in the herbarium. It is one of the few prominent economic fungi that the writer has not found during the past two years. Attention is called to it here in the hope that those troubled with it will send in specimens during the coming year. The European varieties are said to be most susceptible to its attack. That it has proved injurious in the State in the past, is shown by an article written years ago by Dr. Barratt of Middletown and published in the Trans. of the Conn. Agr. Soc. He notes its occurrence here as far back as 1837.

Grape.

Black Rot (*Guignardia Bidwelii*). This trouble seems to have been worse last year than the year before, especially in vineyards that have not been sprayed from year to year.

Winter Injury. A peculiar case of what appears to have been winter injury resulting from the December freeze occurred on European grapes grown under glass at New Haven. The injured vines sent out a conspicuous morbid knotted growth, usually near their base. As the trouble has been reported before in this country on grapes grown out-doors, attention is called to it here in the hope of receiving further information.

Musk Melon.

Downy Mildew (*Plasmopara Cubensis*), etc. The past season has been very unfavorable for musk melons aside from any fungous trouble. The seed came up poorly and the wet, cold weather retarded the growth of the vines. The middle of August found no melons ready for the market and few home-grown ones found their way there later. The downy mildew which has proved so serious for several years past, was later in appearing and less destructive last year than the previous year. Anthracnose, leaf mold and wilt, however, were perhaps more common than usual. A new trouble, called scab, that causes sunken areas on the vines and fruit, which become covered with an olive moldy growth, appeared in early August and did some damage. On the whole, spraying last season was not very satisfactory, partially because of unfavorable weather conditions to induce proper growth. The lateness and mildness of the attack of the mildew may indicate that it is disappearing just as it did some years ago. If this is the case, melon growers need hardly become so discouraged as to give up their culture as some are doing.

Peach.

Brown Rot (*Sclerotinia fructigena*). As there were very few peaches last year their fungous troubles did not attract especial attention. The trouble that is usually most serious, brown rot, was much less destructive than usual, especially to early varieties. As this fungus likes to play havoc where the peaches

are thickest, probably the light crop had something to do with its moderation; the weather, too, at the time of the earlier pickings was less favorable for its development.

Scab. On the other hand, scab seemed to be more conspicuous than usual. Most of the peaches on the market were more or less affected with it. Some growers who sprayed their orchards with lime, sulphur and salt for the San José scale seem to think that this insecticide also has considerable fungicidal value in lessening the scab. As this fungus lives on the twigs as well as on the fruit and leaves, there is not much question but that a winter spray has value in keeping it down somewhat.

Bacterial Spot. An apparently new trouble of the peach was sent to the Station for the first time last year. This was a bacterial disease that caused a spotting of the leaves similar to the common shot-hole trouble caused by various agents, as scab, spraying, etc. As the season was unusually favorable for the development of bacterial troubles, little anxiety is felt that this will become a serious one.

Winter Injury. As stated before, the peach also suffered from the freeze of December 9. This manifested itself in the death of the flower buds and some of the young twigs and in less serious injury to the wood of the branches. The death of the fruit buds was soon discovered, but the injury to the wood was usually overlooked by the growers, though it was easily shown when the injured branches were cut across. This showed as darker streaks in the wood, becoming more evident and general toward the ends of the branches and often ending in the dead twigs. It is a question just how much this injury amounted to. In most cases the foliage put forth by the trees was excellent. Where the injury was most severe, however, even if it did not show in the foliage, the annual growth made by the wood was lessened. Those trees that were severely pruned seemed to make a greater growth of wood than those that were not. The question arises, are the results of such injury always manifest the first year, and may they not by enfeebling the tree show in later years as yellows or other perplexing troubles?

Pear.

Blight (*Bacillus amylovorus*). There was more blight in pears last year than the previous year, though this did not become a serious trouble.

Black Mold (*Fumago vagans*). Because of injury started early in the season by the pear psylla and apple louse the leaves of these trees became coated with the black mold which grows in the honey dew secreted by such insects. Because it was so conspicuous some growers were afraid of this fungus. However, its growth on the leaf is superficial and it can scarcely be classed as a parasite. The injury to the leaves was due to the insects, though very often this was not noticed until they had disappeared.

Rot. Pears seemed to keep poorly last season, starting to rot in many cases soon after being gathered. These ripe fruit-rots are due to a number of fungi.

Plum.

Black Knot (*Plowrightia morbosa*). From the number of complaints, black knot was more prevalent than usual. It seems to be as bad now on the Japanese varieties as on the native.

Quince.

Blight (*Bacillus amylovorus*). The quince, apparently, suffered more from the blight than either the pear or the apple. Proper attention to winter pruning would no doubt lessen this trouble where serious.

Black Rot (*Sphæropsis Malorum*). The black rot on the quince seems to be most injurious to the fruit. The rotting of quinces is due chiefly to this fungus and the brown rot, both of which were more or less common last year.

Leaf Blight (*Entomosporium maculatum*). This is a trouble that is usually present, but we have no especial data concerning it last season.

Raspberry.

Cane Blight (*Sphærella rubina*). The raspberry, especially the blackcap, like the musk melon, seems to be having a rather hard time in Connecticut. I wish to call attention to a trouble of the raspberry that seems to be rather common here, though it has attracted little attention. This cane blight shows in

late spring or early summer as purplish patches on the young canes, beginning at the lower nodes and appearing higher as the leaves drop off. These spots eventually run into each other somewhat. In the fall and succeeding winter these canes become whitish, and by spring are dotted with the small, black, mature fruiting pustules that spread the disease to the young canes. While this trouble does not kill the canes it undoubtedly affects their fruitfulness and vigor. There is another cane blight that causes more evident injury to the canes as it often girdles them with a dead area, causing the parts above to wilt. Some of our growers have been seriously bothered by the fruit wilting about the time of maturity, but I have not yet ascertained whether this latter trouble has been responsible for this.

Yellows. There is another trouble common in our raspberry which has very properly been termed the yellows. This seems to be a physiological trouble, and is characterized by sickly looking foliage which is usually streaked with yellow and more or less curled. Very often this appearance is seen in vines also affected with the cane blight. It may be, in some cases, a lack of proper plant food that is responsible for the trouble.

Strawberry.

Frosty Spot. The last host with which we have to deal is the strawberry. No serious trouble has been reported for this the past season. The effect of the late fall fruiting remains to be disclosed next summer. There was, however, one curious trouble shown late in the fall in some patches near New Haven. I have called this frosty spot, because the appearance was not unlike frost or the mildew fungus on the upper surface of the leaves. This appearance was evidently due to the flaking up of the cuticle and eventually to the rupture of the epidermal cells when the frosty appearance gave way to dead brown spots. The trouble was a physiological one, no doubt induced by peculiar weather conditions coupled, perhaps, with the method of cultivation, the trouble being most pronounced in young plants grown between rows of early potatoes. The trouble was called to the attention of the writer by growers who feared it might be the beginning of a serious fungous disease.

Respectfully submitted,

G. P. Clinton, New Haven, *Chairman.*

At the conclusion of the report Dr. Clinton offered the following recommendation:

The Committee on Fungous Diseases recommends that this Society at its next annual exhibition of fruits held in the fall, include among its premiums a first premium of $5 and a second of $3 for the two best collections of fungous diseases made the coming year on the following plants: apple, blackberry, cherry, currant, gooseberry, grape, musk melon, peach, pear, plum, quince, raspberry, strawberry; that these premiums be open to anyone in the State and without entrance fee; that they be awarded on the neatness with which the collections are prepared and displayed, the variety of diseases shown and the accuracy with which they are named by common name. If the competition should prove successful, the Committee further recommends that this be made an annual feature which might also be extended to include similar premiums for insect pests. If this recommendation is authorized by the Society, the Committee has assurance that the funds for the first year's premiums have already been provided.

Mr. J. M. Hubbard: I move this report be accepted and placed on file, and I would like also to move that the recommendation of the Committee be adopted. I don't know how it appears to others, but it seems to me this is an important matter.

Motion seconded and passed.

The Committee on New Fruits reported that owing to the unusual scarcity of fruit last season, they were unable to examine any new varieties of special value.

President Gulley: I believe that finishes the reports of committees.

According to the program, we are now to have a short paper on "How to Secure Clear-Skinned Fruit," by Mr. E. M. Ives of Meriden. This is a very important question in connection with our business, and on which largely rests the profits. I might say, Mr. Ives has furnished us with some nice clear-skinned fruit for our exhibit at St. Louis, and I presume he knows what he is talking about.

How to Secure Clear-Skinned Fruit.

The apple, which was so fair to look upon and so tempting to Mother Eve, has now become the prey of many enemies, and to regain some of its lost beauty needs to be rubbed up and powdered now and then with a mixture of blue vitriol and lime.

Apple scab and sooty fungus are the most frequent blemishes to be found on our apples.

Scab, the worst fungous disease, commonly known as apple scab, or cracking of the apple, attacks both fruit and leaves.

Where the spots are large, the fruit may become one-sided or ill-shaped and frequently crack open.

This fungus is likely to get in its work early in the season, for it may develop enough to be discovered by the naked eye on unopened blossom buds.

Cold and damp seasons are especially favorable to its early development, and it has been observed to cause great injury by destroying the blossoms and much of the young fruit, and breeding black spots on the remainder. To control the disease, it is important to begin treatment early.

It must be understood, that treatment for preventing the germinating of the spores is more effective than treatment for killing the fungus after it becomes lodged on the foliage or the fruit.

Scab, when prevalent, may be held in check with Bordeaux. Where three sprayings are given, the first should be after the buds break and before the blossoms open, the second after the blossoms fall, and the third about two weeks later.

The Sooty Blotch Fungus on the Apple.

This is a disease in which the skin of the fruit is covered with spots and blotches of a fine black mold, giving the fruit a dirty, unsightly appearance.

As the mold grows only on the surface of the fruit, it does no injury to the apple except to impair its selling qualities; the brightness is gone, the market value of the affected fruit lessened. This disease is widespread, evidently, as it is mentioned as prevalent in New England, the Hudson Valley and throughout New York state and westward into Ohio, where it has frequently in the past been referred to.

It has been observed that this fungus develops and spreads more rapidly late in the season, and does not menace the crop, as does the scab, by its earlier work.

Under favorable conditions, the sooty fungus will, doubtless, attack most varieties of apples and some kinds of pears, but this fungus can be controlled by Bordeaux.

The blotches are round in outline, pale at first, but later sooty black.

The spots make the apple dull, unsightly and less salable except at lower prices. Apples covered with it are very apt to become shriveled and soft after being stored late into the season under ordinary storage.

As the mold grows upon the surface of the skin, it does no harm to the flesh of the fruit, but the brightness is impaired and the market value lowered.

I do not need to call attention to it here in Connecticut, it is self-evident to most of us.

It is troublesome in orchards having poor air drainage, and thrives best in damp, shady places.

In some cases it may be largely checked by thorough pruning, so that the fruit gets much sun and good circulation of air through the tree.

This is an old enemy in a wet season, particularly last season, when it was very much in evidence. As the latter end of the season was rainy and cloudy, just the right conditions prevailed for its spread.

I believe more work will be required to get rid of it than for the scab.

Late Spraying.

The usral sprayings recommended, some seasons, like the past, have not checked the fungus, as it usually does, and some are thinking that a later spraying or two may have to be given in late summer, perhaps August 1st or earlier, and would be found beneficial; this, to my knowledge, has not been tested yet.

Since the lime, sulphur and salt mixture has been used for winter treatment for the San José scale on the peach, it has also been found to drive out, in a large measure, the peach scab. Since the apple scab is carried over the winter on the apple

tree and, possibly, the sooty fungus, where the apple needs spraying for the scale, I am inclined to think we shall get some benefit, indirectly, in helping us to secure cleaner fruit of both peach and apple.

As to codling moth and other insect work, Palmer worm, which eats pockets out of the fruit when small, these can be controlled by adding poison to the Bordeaux mixture while spraying for the scab and sooty fungus.

After Mr. Ives' paper, Mr. N. S. PLATT said: Mr. President: This is a subject that demands attention from us all on account of the prevalence of sooty fungus. It is a thing we apparently have got to make a special effort to get rid of. I should say Mr. Ives' recommendations are right in line with what would apparently be the best practice to pursue. This is only the starting point of investigation on this subject. If any of our own people or any visitors from other States can tell us anything about it, we should be glad to hear from them.

PRESIDENT GULLEY: We should be glad to have other information brought out at this time. There is no question but this is important.

MR. FENN: I neglected to spray three Baldwin apples and I suffered in consequence. The majority of the trees which I did spray had clean, nice fruit, but the ones I did not spray were in a condition such as Mr. Ives has stated. The outside was shriveled and the apple did not look good. It showed the damage caused by neglect to spray two or three trees. I think the spraying is really going to be a benefit. It was my pleasure to be present at a meeting of a Massachusetts society last spring. There were some apples on exhibition there which had been sprayed five or six times. Not a blotch was found on those apples. Those growers are thorough believers in spraying. I think the more of it we do the more we will get clean, bright apples, and they will certainly command a better price.

PRESIDENT GULLEY: Which was the most serious with you, the black fungus or the scab?

ANSWER: The black fungus.

PRESIDENT GULLEY: We have a few moments now, and if there is anything you would like to bring up, you can do so at this time.

A MEMBER: I would like to call for question No 22, on the printed list: "What about 'Pyrox' (Bowkers) as compared with home-made Bordeaux mixture for spraying?"

MR. N. S. PLATT: I have, from year to year, received circulars describing "Pyrox." I have figured it out and found it would cost about twice as much as Bordeaux for the same amount. I know, however, of a certain orchard where they have used it for several years, and they have had nice crops there, clean and nice looking. The fruit hung on and the leaves were retained on the trees. So it has been successful on this mature orchard. It has borne better crops for the last three years since they have used the Pyrox.

PRESIDENT GULLEY: Do you know whether they ever used Bordeaux or not?

ANSWER: They did.

MR. STAPLES: I have used Pyrox in my orchard in Maine with good results.

PRESIDENT GULLEY: Do you know anything about the expense as compared with Bordeaux?

ANSWER: I do not.

PRESIDENT GULLEY: My own idea is that it would be an expensive thing. The advantage is in having the material in shape for the uninitiated to handle, but it is certainly a very expensive thing if the members will figure it out by the barrel.

MR. GAYLORD: I have used the Bordeaux mixture on my trees and I find by using the Lenox lime and also the compressed air sprayer, made in Rochester, N. Y., I have good success. But I have a great deal of trouble in slaking the lime. Now I want to know if it is right to let the lime settle to the bottom of the barrel and then, just use the clear water remaining on top and mixing that with the vitriol. That is the only way I could get it through the nozzle without clogging. I want to ask the members how they can slake the lime so as to make it not clog the nozzle?

A MEMBER: Do you strain it before you put it in?

ANSWER: Yes, sir. Through two or three kinds of cloth.

A MEMBER: Well, you don't want to use cloth. You ought to use a wire strainer. Try that and you will have better luck.

MR. MOSES: I commenced spraying about three years ago; I knew very little about the Bordeaux mixture. I used Pyrox,

and I found it cost three times as much and did not spray quite as well.

PRESIDENT GULLEY: I think the gentleman's trouble is in slaking the lime. It is certainly possible to slake the lime properly. I think the matter of the strainer is an important one. I know of those made of brass but not of iron, and it need not be so very fine.

MR. CLINTON: It makes a difference how the Bordeaux is made. You want to dissolve your lime, strain it and then pour in your copper sulphate, and when you mix the materials in that way it will stand longer.

MR. BENNETT: Some time before this meeting is over I want to illustrate how to make Bordeaux properly.

PRESIDENT GULLEY: This is an important matter so far as suspension is concerned. It does not make any difference really in the working of the pump.

At this point a recess was taken for dinner.

AFTERNOON SESSION.

The Convention reassembled for the afternoon session at 1.30. When President Gulley called to order, nearly every seat in the hall was occupied. The large gathering manifested much interest in the subjects under discussion, and every speaker was listened to attentively.

Doubtless, many were attracted by the very practical and interesting nature of the first topic of the afternoon, that of utilizing the rough lands of Connecticut for profitable fruit crops, and also by the fact that two such well-known horticulturists as Messrs. Hale and Collingwood were to discuss it.

The President first introduced Mr. J. H. Hale of South Glastonbury, who gave a splendid address, as follows:

Utilizing Rough Lands for Orchard Purposes.

Mr. President and Gentlemen of the Pomological Society:

Those of you who visited my farm last fall and looked over some of the rough work we were attempting to do in orchard planting, and have seen some of the other orchards where we

have taken rough land, know I am in it to a certain extent, to such an extent, in fact, that a distinguished brother from a neighboring State said, "Mr. Hale is either a damn fool or crazy;" and your Pomological Society last summer endorsed that opinion. It leaves me in the position of the colored man in court. Senator Bacon tells the story, and he says his first case was defending a negro for stealing chickens. The colored gentleman was on the stand, and the opposing lawyer said to him rather sharply, "Are you the defendant in this case?" "No, sah," said the scared negro, "I ain't the defendant, I'm the fellow what stole the chickens." In this case, I am the fellow what stole the chickens.

My experiments in this line date back some seven or eight years ago, when a rough piece of land was offered me and I refused to take it at any price. I had been tilling land easily ploughed and easily cultivated, with only a moderate amount of stones; but later, needing more land, I bought this tract and cleared away the stone walls, and planted it, and found it not so difficult after all. Then, in connection with my friend, Coleman, I bought a share of two abandoned farms, having sixteen fields, divided by stone walls and then sub-divided by rocks every fifteen feet each way. We had quite a time, I tell you. The land was quite well broken up with ploughs, but it was a difficult matter to till it. No modern implements of torture would work that soil at all, and so some improvised A harrows were made out of white oak that grew outdoors, by that I mean trees that grow out in a field by themselves; if you want to have good white oak, get that kind. And then we used Bessemer steel teeth. After that we went over the land. You will recollect, I asked this Society some time ago how we should till that land. There were boulders from two to five feet in diameter, and anywhere from five to twenty of them in the square between each tree. It did not seem at that time it was possible to move those stones at a cost that would warrant the outlay, in comparison with the final returns, but after another year, we began one fall with, I think, eight horses and stone drags, and worked from six to eight weeks with twelve or fifteen men and these teams, and moved the roughest of the stones; but even then, it was hardly possible to drive on any part of that orchard with a farm wagon and load. I think,

about the end of the fourth year, we did get on so it was possible to drive around with a team. Until two years ago it was entirely impossible to get around with spring wagons, but now we can do it nicely. Men were put at work planting the trees, and they made a wonderful growth without any fertilizer except clover in the late fall. This has made a successful orchard so far as tree growth is concerned. It is planted with peaches and apples interplanted.

Three years ago, needing more land, I began at home, and wanting higher land, I bought some fifty acres of rough, partly abandoned pasture land and partly wood land, where the timber had been cut away, and I began clearing that away by taking off the walls, blasting out, digging out, and in every other way getting out the rock as well as getting out the stumps. I used some 100 pounds of dynamite to the acre. It has taken two years, or nearly three, to clear that tract of land, although some of it was planted the first year, and some of it planted with apples last fall.

On the adjoining side of the road was a field of 75 acres on a high hilltop, nice fruit land, but covered with chestnuts and other sprouts. These were of about eight years growth. This last summer, I put a number of men in there cutting down this growth. The largest of the trees was perhaps eight inches diameter at the base, the average was probably not more than three. But we cut it all down and left it on the ground, so that it lay there during July, August and September. On this ground was a lot of decayed sticks and brush of the earlier cutting, and the accumulation of leaves for a century or more. When this cutting was all done, along in October, on a still day, when there was practically no air or motion at all, we started a fire around the edges of this field. What wind there was was in the southeast. We started on the west side, across the field, and then around the south side. There was a slow, gentle back fire all the time until we got it started on the south side. Then in a moment a hurricane of wind came and you could not hear yourself think; but in an hour and fifty minutes from the time the match was applied everything was clear, except the rocks. As I said before, there were a great many leaves on the ground. These leaves had made it impossible for the fire to get through, and after the fire was all gone,

you could walk over the field, dig your toe in and find fire still there.

Then came the question. This field had cost me money, we had spent some time clearing it, and the cost of a hundred pounds of dynamite to the acre stared me in the face, as well as an empty bank account. I wanted to get the grass growing, and so I put men at work there on that 75 acres, lining for apple trees. This was difficult work, as sometimes a tree ought to come right where there was a rock. It was not possible to use a spade, and so we followed along with a crowbar, and we also used a lot of dynamite. The ground was hard, and we had to blow it up. If a rock or stump was in the way, this was the method we pursued. The cost of digging holes with dynamite was not, on the average, any more than digging with a pick or spade. Sometimes it would take one-eighth of a pound, sometimes one-quarter, and sometimes even one-half, but the average was not one-quarter pound. When the holes were dug in that way the field was planted with apples, and I have been waiting to know what I should do to get returns. I haven't the exact figures, but the cost of the rough, rocky fields that have been cleared runs all the way from $200 to $400 per acre, a pretty big proposition, and if I thought I had got to pay the bills I would not do it; but I am hoping the consumer of the fruit will pay the bills, and I am waiting for the profit. To be sure, I advanced the money, but I am looking for it to come back.

An Italian man, whom I had at work with me for some years, said to me one day, "Mr. Hale, why you no plant peaches in there?" I said, "It is too rough. Peaches won't grow without tilling." (I mean I think so, Brother Collingwood.) But the Italian said, "You give me the contract, and I will make them grow." I replied, "How are you going to do it?" He said, "Well, I will put some Italian men there and we will keep grubbing and grubbing, and we will make them grow. We will make them grow like h—l." So I closed the contract with him. I thought he had said "make them grow like hail" and I felt pretty good, but I am trying to make them grow like "Hale," and he is trying to make them grow like h—l also. That is all I can say about it. These fields cost a great deal of money to prepare to till, but they

are rich in fertility, and it is not necessary to expend any money for fertilizer. They are elevated and well drained, and after this past winter you will know that drainage means a good deal, and also elevation means a good deal. When you find a difference of twenty or thirty degrees in the temperature, and find the buds alive at the top of the hill and killed at the foot of the hill, you will see it means something. On a field like this, you can have good crops on an off year, get good money for them and then pay your bills, if you are an honest man. While this Society has endorsed what the gentleman said about my being either a damn fool or crazy one, it remains to be seen.

That, in brief, is as far as I have got. I haven't any well defined plans for the future. If you ask me what I shall do next year, I will tell you what I hope to do, but I cannot tell for sure. I am satisfied that the rough lands of Connecticut can be developed for horticultural purposes, and they will make better lands than any we own.

President Gulley: What do you think you will do next year?

Mr. Hale: I think we shall take some grubbing hoes and grub around those trees. If there are any that need taking out, we will take them out. I think that is the best we can do.

The subject was continued by Mr. H. W. Collingwood, editor of the *Rural New-Yorker,* New York, who explained his methods of planting and caring for the trees in the "Roughland Orchard."

Planting and Care of the Trees.

By H. W. Collingwood.

Mr. President and Members of the Connecticut Pomological Society:

I am very glad to speak to you to-day. I feel we have been living as neighbors for fifty years, and I like to speak to a Connecticut audience. In one way they are like the gathering of colored gentlemen. Colored gentlemen say that at a political convention "every nigger has a razor in his boot." Now, every-

one here has a razor in the end of his tongue, and he can get up and tell a man if he gets off the track. I am glad of that, because I have tried to put the truth into what I am to say this afternoon, and the more questions that are asked, the more good it is going to do.

I am glad to have a chance to explain one thing. Brother Hale has had a lot of fun with my "crowbar method" of planting trees. I want to say right here, that I planted one thousand trees with a crowbar and I will never plant another that way again. But somebody had to go to the expense of planting a thousand trees with a crowbar to learn how to do it.

Now I am going to try and show you on the screen how the trees are growing. But first let me say how I came to attempt this work. For a long time I have thought, with all due respect for our horticultural brethren here, who have been very successful at the experiment stations and agricultural colleges, I have thought sometimes those men did not get down to the natural conditions which surround the average man on the average farm. I find as I go through the country, people tell me they are not going to go into fruit culture, because it costs too much, requires too much capital. They thought it an expensive thing. They thought they must start with the best of soil. These ideas have gone out; and when an average farm came into my hands with average conditions, average capital, etc., to carry it on, I wanted to see if I could make that land, from which five generations had made a living and the sixth had run away, I wanted to see if I couldn't take that land and make it yield an income.

It was rough, stony land: you have got some of it here in Connecticut; I knew it when a boy, and I can tell you my land is as rough as yours. It was all right except it was abandoned. But I had faith in it, for I believe that land which will grow a good chestnut tree or a good maple tree, with proper handling will grow a good apple tree or peach tree.

I have found that the currant as it ordinarily grows and is planted will better stand hard, rough, conditions than will any other fruit I have ever grown. It will give year after year a better fruit than raspberries or strawberries or any other fruit under the same conditions. I began to try and find why that was, and it seemed to me it was largely the rooting of the currant

that gave it that advantage. I think our nurserymen will bear me out in saying that the currant has this advantage over any other small fruit. And when I began planting the apple and pear trees, etc., I began to cut the roots so that they would come as close as possible to a cutting like the currant. My trees are now, I believe, long lived, vigorous and strong.

Another thing. I have two lads at home, not my own, but I want them to start on my farm and become fruit growers. I want them to be farmers, and it seemed to me if I could bring those two little boys up with a tree and have them take 500 trees and 1,000 trees and use their little hoes and grow up to 25 years of age and then look at those trees and say: "I have lived on this farm eighteen years; the boys on the next farm have lived there eighteen years, and what have they got to show for it. They have raised potatoes, etc., but to-day they haven't anything to show for it. I have my tree. It is the product of my care. Year after year, slowly and gently those trees have grown along and I have grown along with them. They are mine."

Now I will show you on the screen how we progressed.

(At this point the hall was darkened and a large number of pictures were thrown on the screen, descriptive of Mr. Collingwood's methods and trees. Figures 1 to 5 are but a few of the many varieties shown.)

I first bought 700 June-budded peach trees which were cut severely back at the nursery. They came late in the season, and were cut back to about 12 or 15 inches of top, and all the side roots cut off so as to leave a stem below ground as smooth as a lead pencil. As trimmed they were put into a bucket of water and carried in this to the hole. The field was first staked off 18 feet each way. Then with an ordinary crowbar holes were punched in the sod 10 inches or more in depth. From an old woodchuck's hole sand was scooped up, and the method of planting was as follows: The little tree was put down in the center of the hole and some of the sand sifted down around it to hold it upright. Then sand and water were poured around the little tree until the hole was full; when it was packed firm and solid. The object of this was to exclude air from the bottom of the root, and pack the sand solidly around the sides so that when

the roots did start they would come from the bottom of the root in much the same way that a cutting starts. Of course this work was rapidly done and cost but little.

The Field; Care. The field is an old abandoned brush heap at the back of the farm. It is very light and stony, and had not been plowed for thirty years, as far as I can learn. The soil where these peach trees are planted is so poor that only a few coarse weeds will grow. A scattering growth of cedars and birches covers part of the field, while the rest is quite

FIG. 1.—In a crowbar hole.

thickly covered with brush and small trees. The field was not cleared except that the brush was mowed where the trees stand. I planted the trees in this crude, rough way because I wanted to test the peach under the hardest conditions. The experts have clearly shown what high cultivation and heavy feeding on cleared land will do. Can a man without large capital or competent help, and mostly by the labor of his own hands, raise good fruit on rough land? That seems to me one of the most important questions connected with fruit growing. It is what I started out to answer. I had agreed with Mr. Stringfellow to hoe around these trees several times

during the season, to fertilize them well and to cut grass and brush to throw around them as a mulch. As the trees started to grow I became interested in another side of it, and I decided to let them shift for themselves and try the original experiment elsewhere. I therefore let most of those trees alone until June, then hoed around them and gave each a small handful of fertilizer. I will admit that I tried hard to kill them with neglect.

FIG. 2.—First year's growth.

except a few which were handled as I agreed. Part of these trees were Mountain Rose, which had put out their leaves before we could plant them. We pruned these forward trees as we did the others, and lost nearly all of them. I have since learned that this entire root-pruning will not answer when the trees are so far advanced. Of the trees with dormant buds, not half a dozen died. They were slow to start, and sent out shoots from the lower buds. We dug up thirty or more at

different times to study their root growth. In every case the bottom of the root had calloused over and little tap roots had formed, which started straight down into the soil. The ordinary branched or surface roots which are found when a tree with long roots is set in a large hole were not found on these little trees. Later in their growth a mass of feeding roots appear, and run out all over the upper soil. These trees made, without any question, a deeper rooting system than the ones I planted with long roots in large holes. This was to be expected, since there was no chance for the first roots to go

FIG. 3.—A mulch of stones.

anywhere save straight down. These neglected trees headed close to the ground and made a fair growth the first season. The summer was very dry. I had been assured by good peach growers that trees so closely pruned would not start, and could not endure the hot season. That was the chief reason I neglected most of them—in order that the system might be tried under the worst possible conditions as well as under more favorable ones. In the fall we planted larger trees in the places where the Mountain Rose trees had died. These we also close root-pruned. The trees had no protection through the winter.

In the spring about twenty of the small ones were thrown out by the frost. There being no side roots to anchor them, the lift of the freeze in the upper surface of the soil pulled them gradually up until the roots were enough exposed to dry out. I now know that had these trees been fertilized and mulched or hoed as Mr. Stringfellow desired, they would have made more growth, so that when properly banked for winter they would not have been lifted by the frost. The next year the trees made a good top close to the ground. Here another trouble developed. The winds on this hill are very strong,

Fig. 4.—Crowbar hole peach tree.

whirling around through an opening in the woods. The close-pruned trees without brace roots, whirled about until holes were made at the base, much like a large funnel. In some cases the trees lay flat on the ground, and one produced a few peaches in this position. I have left about fifty trees in the brush with absolutely no attention whatever. They are now mere little runts. This year I shall clean them up, keep them well hoed and fertilize them heavily. My object is to see if a runt tree is like a runt calf—incapable of good growth or profitable response to feeding. I will also add that I intend to leave 1,000 trees to head out as they please—simply removing ingrowing or conflicting branches.

What About It? What can be said of this plan of planting trees without any side roots in crowbar holes? From my experience, I conclude that trees will certainly live when properly planted in this way. With me they root deeper and head lower than trees with long roots in large holes. I am quite sure of this. They make a slower growth the first season, but when fully established make wood enough for practical purposes.

FIG. 5.—Trees trimmed for planting.

This method of planting is rapid and cheap. The chief disadvantages that occur to me are as follows: With the small crowbar hole you are likely to leave an air space at the bottom of the root. This will kill or stunt the tree. With a larger hole you can be sure that the soil is packed firmly around the root. While I think the tree without any side roots and packed in a small hole will root deeper, it is better, in our practice, to leave stubs from one to two inches long at the side. This anchors the tree firmly in the soil. It will not be whirled about

by the wind or lifted by the frost. True, the young tree might be staked until the side roots are firmly started, but that is not practical on a large scale or the plan I have in mind. I have decided therefore to leave short side roots on the trees and dig small holes with a spade so that we can pack the roots in firmly. Otherwise I shall follow Mr. Stringfellow's methods closely, except that while he advocates cultivation, until the tree comes in bearing, I expect to mulch from the first and use fertilizer.

The Pictures. Figure 1 shows one of the larger peach trees planted in a crowbar hole in the fall, after other trees were pulled out. Figure 2 shows the growth this tree made the first season after planting. It was "mulched" by piling a few stones around it, and had no fertilizer. Figure 3 shows the same tree with its clothes on. It is, as you will see, a low-headed bush. Its wood is firm and solid. It made a slow, gentle growth and has put out a fair setting of fruit buds, which are now mostly alive. I shall let it produce a few peaches this year. Figure 4 shows a June-budded tree planted in a crowbar hole in good sod. It has never been cultivated, but simply mulched once with manure and again with cut grass. It is quite easy to see what this tree would have come to had it been headed high and fed. These trees will give an idea of what I have in mind on this windy and rocky hillside. I prefer low-down chunky bushes which can be pruned with a knife, and picked and sprayed from the ground. By crowding such trees 16 feet apart and thinning the fruit severely, I think we can make an acre of our poor land pay well. Experienced peach growers tell me that the plan will fail because I do not get wood growth enough on the trees. They favor forcing the trees to large growth and then cutting half of it off. They ought to know, but I am going ahead to find out what is best for our rough land. The picture at Figure 5 shows a Kieffer pear and a peach tree as they came from the nursery, and how similar ones were trimmed for planting. These trees were planted on poor soil in spade holes, with the dirt pounded hard about the roots. A space about three feet in diameter was hoed around them three times and about a pound of high grade fertilizer scattered around each one. Weeds and brush were cut and thrown around them. Last

spring was very hard on young trees, yet handled in this way both peach and pear sent out several shoots from two to three feet long. I have nothing that could be called rich land on the hills where we are planting trees. I intend to use fertilizer in fair quantities until I can get a fair catch of grass. On some fields I do not expect to obtain a sod, but shall fertilize the trees and cut weeds and brush to throw around them. I shall tell of our experience in apple planting later.

I have planted a fair-sized orchard of apple trees on a somewhat different plan. The roots are cut back to from four to five inches, and the tops cut back to correspond. Holes are dug large enough to contain the roots without crowding. The dirt is packed down hard around the roots, a mound raised around the base and about fifty pounds of manure, or corresponding amount of straw or leaves, put around outside this little mound. This planting is done in the fall; the mound is raised to keep mice from the trees and to hold the tree firmly in the ground. I have tried three different methods of caring for such trees. In one the ground is left in sod from the beginning. We cut a swath with the scythe along the row of trees early in June, and pack this grass around the trees. The rest of the field is cut with a machine. About two-thirds of the grass is hauled out for hay, the rest put around the trees for a mulch. In such meadows we use five hundred pounds or more per acre of a high grade fertilizer, and the manure from feeding the hay is mostly brought back and thrown around the trees. In another situation where there are fewer stones, we work the space between the trees with a spring tooth harrow, sow cow peas late in May broadcast among the trees, leaving a space about four feet square around each tree, heavily mulched. Late in August we broadcast Crimson clover and cow horn turnips right among the cow peas. The turnips will grow, and there is usually a fair stand of Crimson clover, most of which dies out during the winter on our exposed hillsides. In other cases in rough land, which could not be easily cultivated or worked, we plant the trees right in the brush, pruning the roots and putting them in small holes, cutting the brush and piling it around the tree with weeds, coarse grass or anything else that will grow. We also use in connection with this mulch a fair amount of fertilizer around the trees. My object in try-

ing these different plans is to adapt the culture to the conditions of the farm. It is in one respect an experiment, for I am trying to learn if there is any form of culture that will enable one man with a good boy to plant and develop a fair-sized orchard with their own labor. Thus far the trees that have been cultivated have made a larger growth. Yet this growth is not so much larger than that on the mulched trees as I had been led to expect. My judgment is that the mulched trees are going to make lower heads, closer to the ground, and with a better top for spraying and handling. The trees in the brush have not made as large a growth as the others, which was to be expected. I am confident, however, that they will make a slow and steady growth, and prove in the end profitable trees at a much less expense for the finished orchard than would be the case had they been plowed and cultivated. I have learned that it is a mistake to sow rye in a young orchard. If it is cut early, as soon as the head appears, and thrown around the trees, it will not do much damage, but if it is allowed to mature, or allowed to come anywhere near it, the trees are bound to suffer, for rye is the greatest robber of moisture of any grain we have.

After a brief recess, President Gulley announced that Mr. E. R. Bennett, Assistant Horticulturist at the Storrs Experiment Station, would give a demonstration of how to make a *perfect* Bordeaux mixture.

Mr. Bennett then took the platform, and in plain view of the audience, proceded to mix the lime and copper solutions used in the Bordeaux.

Mr. Bennett said in explanation:

The proper making of Bordeaux mixture has much to do with its ease of application as well as its efficiency as a fungicide. The cut on page 47 shows two jars of Bordeaux mixture, both made by the same formula (4, 4, 40) and at the same time. The mixture in the jar on the right was made by mixing the dissolved copper sulphate and slaked lime when in a concentrated solution, then adding water to make up the required amount. This is the wrong way to make the mixture. The photograph was taken five hours after the mixture was made. As the cut shows, the precipitate of copper sulphate and lime

has settled to the bottom, leaving clear water above. The jar on the left of the cut shows the Bordeaux made by reducing

FIG. 6.

the dissolved copper sulphate and the lime solution to the full amount of water before pouring them together. An examination of precipitate in the two samples will show the one on the

right to be much more coarse. Consequently, it would not spray as easily nor make so good a coat of Bordeaux on the plants being treated.

PRESIDENT GULLEY: On the program you will notice that the next paper was to have been on the "Production and Marketing of Apples." We will be obliged to omit this, having received word from Mr. Cross of Poughkeepsie, New York, that he is detained at home by sickness in the family. In place of that, we are to have the pleasure of listening to an address which is in some degree a continuation of the subject which has occupied our attention this afternoon. I now have the pleasure of introducing Prof. W. J. Greene of Wooster, Ohio, the well-known Horticulturist of the Ohio Experiment Station, whom we are very fortunate in having with us.

Professor Greene's Address.

Mr. President and Members of the Pomological Society:

This question of grass mulching is now attracting a great deal of attention, for many people believe it will have a great influence on fruit culture in the future; largely because it will extend operations where they could not be carried out satisfactorily by any other method.

I came here, principally, to hear what Mr. Hale and Mr. Collingwood had to say. Out in Ohio we have conditions something like yours in Connecticut. We may not have as many stones in our fields, but we have fully as hard a soil to till, and if we are going to grow orchards, we must find some other method than the ordinary one of cultivation. But I have been much interested in what has been said here.

There have been many difficulties in our way, out in Ohio. Things are not just as we would like to have them. This mulch method seems to be about the only plan we can adopt. I am going to tell you about two orchards, one we will call Mr. Vergon's, and the other Mr. Hitchings'. These gentlemen have been working along the same lines. Mr. Vergon's soil is not, perhaps, as good as Mr. Hitchings', but both are doing well. In this grass-mulch method, so far as they have gone, there has been a great deal of encouragement. Mr. Vergon

began fifteen years ago with his young orchard. He has an older orchard, which has been worked for forty years, but he did not follow the mulch system there.

He commenced his young orchard by planting the sod; the field was an old pasture. He planted in the sod, and dug large holes, three feet across. The holes were dug in the fall or winter, whenever he could work. He planted the trees very early in the spring and they were put in in good shape. When they were first planted, he put cinders around them to keep mice away. In addition to that he put straw and grass, or any other material he could find. The soil between the trees was not touched. He did not plough; he has never put a plough into that field since the trees were planted. He allowed the grass to grow. At first he cut and made hay out of it for two or three years; but finally, he concluded it was not the best course to pursue. The land was rich enough to grow good trees, and he decided to take no hay from the field, nothing but apples. And he has kept his resolution. He has put back more than he took away in the way of mulching. He has now gotten the orchard pretty well mulched and in good condition. That is about the sum and substance of his operations.

I became interested in this matter some ten or twelve years ago, and I watched Mr. Vergon and Mr. Hitchings and a few others, and it seemed to be worth while to carry out an experiment along those lines at the Station. We had some soil there that was pretty poor, soil that was not rich enough to raise an average crop, without fertilizers. But we started to plant our land without fertilizer. The ground was laid out and divided up into two parts. One-half has been cultivated ever since the trees were planted; the other one-half we planted as Mr. Vergon did. But we made one sub-division. In the cultivated part, we are growing cover crops each year, and on the other part we are not growing anything. On the part that is not grass, one-half were mulched from the sod and one-half were not. So you see, we are trying quite an experiment there.

Now the best trees in the lots, those that have made the best growth, are the ones that have been mulched, cultivated and cover crops. One season, the mulched trees were a little better, and another the cultivated and cover crops were a little

better. Those that have been mulched were not quite as good, on the whole, as those where the ground has been cultivated.

Now, back to Mr. Vergon's trees. They began bearing when they were five years old. They began bearing quite young and gave good crops when they were ten years old, and have been giving a crop every year since, except one, when the blossoms were killed by frost. He has now 40 acres of young orchards. He does everything, I think, that is necessary, to get a good crop of apples. The trees began bearing young, and they seem to have vigor enough to bear a good crop of fruit. They don't seem to be lacking in anything.

Now, there are some of the benefits claimed by Mr. Vergon that Mr. Hitchings also claims. They, and others who have studied this question, believe that the mulching improves the soil. These gentlemen are mulching the entire surface, yet they are mulching more around the trees than between. The soil between does not lie idle. It is producing a crop of grass, and that falls down and makes a mulch. The supply of vegetable matter is increased year by year. They are laying up for the future of that orchard something that will stand it in good stead for many years to come.

There can be no doubt but that the mulching has been of benefit to them. One can examine the ground and see how much vegetable matter there is. There is increased fertility of soil far beyond the fertilizers. You may cover the soil with straw or stone or any thing so as to cover it, and the soil becomes richer. But it seems to me, the greatest benefit arises from the fact that the trees never suffer for water. There seems to be a plentiful supply. It is important that the trees should have moisture all the season through, and this is an important benefit.

Now I have nothing to say against cultivation. I believe in it, I know what the good effects of cultivation are; but there is one weak point in it. In growing cover crops late in the season, there is likely to be an insufficiency of moisture. The fruit ripens too early and rots too early. This does not occur in the grass-mulch method. The fruit there hangs on longer, it grows up better, and while I will not say it keeps better, I will say this, it does not have to be put in storage. It will stay on the

tree better, and you don't have to store it so soon. There is a great advantage so far as keeping qualities are concerned.

I would like to say, I advise everyone to practice this system. But I cannot do that. I cannot advise anyone to practice any particular system unless I know the circumstances and conditions by which they are surrounded. Each one must study it out for himself, and decide whether this plan is adapted to his conditions or not. I believe, in most cases, it will fill the bill. In many cases it will fail. There are some out in Ohio who think the grass-mulch method means turning trees out to grass and letting them shift for themselves. They think it is the same thing as a slip-shod method. It is not that at all. It means to get the trees in the very best possible condition, so that they will thrive and bear fruit.

Some of our fruit growers seem to think it will answer just as well to pasture an orchard because the droppings will enrich the soil. They forget, however, that they are taking that cover off which protects the fruit late in the season, when the fruit needs as much moisture as it can possibly get. Hence, mulching is an entirely different thing from pasturing an orchard. It is a different thing from allowing grass and weeds and briers to grow up. In the grass-mulch method, we are making mulch of the grass. We are using grass for the benefit of the trees.

Now I think I have explained this method sufficiently. I did not intend to do any more than explain what had been done out in Ohio. I don't care to go into the cause, and a technical treatment of the method here. But I would like to see the subject extended. We are doing all we can at our Experiment Station in Ohio to get the fruit growers of our State to try it. We are doing this because we believe in it. We believe it will help the poor land in the southeastern part of our State and make it more profitable for the cultivation of fruit.

If I have not made the matter at all plain so far as I have gone, I will be very glad to answer any questions you may ask, and explain more fully.

A MEMBER: Do you cut the grass growing between the trees, or let it fall down naturally?

PROF. GREENE: We cut it once during the season and then let it fall down. It probably wouldn't answer quite as well to allow it to grow up, because the leaves and briers would grow over it. It is better to cut the grass at least once a season.

A MEMBER: What was the result of these different methods you have explained when the trees came into bearing?

PROF. GREENE: They have not come into bearing yet. At the Station, our trees are only three years old.

PRESIDENT GULLEY: Suppose you were going to start on land too poor to raise grass?

PROF. GREENE: I would depend on the leaves. If I could possibly get any mulching material or manure, I would use it. That is a problem with us. We cannot grow orchards there by cultivation because we soon get the best strength out of the soil.

PRESIDENT GULLEY: What variety do you grow chiefly?

PROF. GREENE: The Rome Beauty.

A MEMBER: Can you not grow other things in there at the same time as the grass?

PROF. GREENE: Yes; perhaps I should explain that a little. We have a young orchard at the station which we started to grow by cultivation and cover crops. The soil is not nearly as good as Mr. Vergon's, in fact, it is not good enough to raise more than 10 to 15 bushels of wheat, and we soon found we couldn't get a good crop, but an indifferent one. We didn't know what to do. The soil was washed away, and so we hauled as much manure as we could get onto the land to start the grass. Now we have got grass there. But to start an orchard by this method is rather uphill business. I would rather seed it to grass to begin with, and keep it in grass. That would be more satisfactory.

A MEMBER: I would like to ask if the limbs are kept high enough to mow under them.

PROF. GREENE: No, they are not. You see he mulches there and does not need to mow under the trees. They are trained very low, and some of the limbs touch the ground.

A MEMBER: As they spread and get nearer together, it would be impossible to mow, wouldn't it.

PROF. GREENE: It doesn't need mowing there. Once you have got it started between the trees, and the grass will grow for many years to come.

MR. IVES: Isn't that the secret of the whole thing, letting a vast amount of matter drop there so it will mulch the land?

PROF. GREENE: That seems to me to be the best point of all. There is an accumulation of vegetable matter, and this accumulation increases as the orchard grows older. How long it will last I cannot say, but certainly, in this old orchard forty years of age it is evident the trees are plentifully supplied with food and moisture.

Vice President Hubbard was here called to the chair.

VICE PRES. HUBBARD: I have been looking in the question box, and it occurred to me we might take out one or two questions and give a little time to each of them. We have given this subject we have been discussing pretty full consideration. The matter has been exceedingly interesting, and a great many will, no doubt, put these ideas into practice and come here again to tell us about it.

Now here is the first question I find in the box: "What is the most approved method of keeping apples during the winter in a farmer's cellar?

A MEMBER: I would not keep them in the cellar at all.

VICE PRES. HUBBARD: Where would you keep them?

A MEMBER: Out in the field all winter. Just make a little cave and set up some sticks, making the cave about 60 feet long and 8 or 10 feet wide, put your apples in there and they will be all right.

ANOTHER MEMBER: How do you sort them?

ANSWER: I don't sort them at all.

ANOTHER MEMBER: How do you cover them?

ANSWER: I put up chestnut poles, then cover with some earth or some other covering on that.

A MEMBER: At what time do you put the apples in?

ANSWER: When I pick them I put them in bins under the trees and keep them there just as long as I can without having them freeze.

MR. MERRIMAN: Mr. Chairman, I think the best way is to sell the apples right off the trees.

MR. COOK: I think the best way to keep apples in the cellar is to keep them in bins, if you have good bins. If you put Greenings in barrels they will scald, but if you put them in

good bins in a good comfortable cellar you will be able to keep them.

MR. HINMAN: We used to keep apples in our cellar, but owing to matters over which we had no control, we had to build a fruit cellar. Our new cellar is a very good one, no fire being over it or around it, and it makes a spot where you can keep apples until late in the season. We used to have apples up to January, we now have them up to March, and they are sweet and clean.

VICE PRES. HUBBARD: The next question is, "What was the cause of so much leaf curl on peach trees last season and what is the remedy?

PRESIDENT GULLEY: As far as leaf curl is concerned, there is no question but what it is a fungous disease. In a dry or warm season we very seldom see it. It has been demonstrated it can be controlled by spraying. In the West, they have had more of it than we do in Connecticut and they now practically control it by spraying with the Bordeaux or other mixtures.

VICE PRES. HUBBARD: The next question I take out of the box is, "Is it safe ordinarily to prune a peach or pear tree in the late fall or early winter?"

MR. BARNES: We generally prune whenever we can make it convenient; last year we commenced in January. I should prefer to prune later in the season than late fall or early winter.

A MEMBER: I did it once and the trees went back on me.

MR. SMITH: I pruned early and found the trees came through the winter in good shape. The trees bore a good crop. However, this was on a very small scale, I want it understood.

MR. COOK: I tried that same thing once and they killed back. It was not a success with me.

VICE PRES. HUBBARD: The next question, "In the recent great freeze, did Japan plums prove to be more hardy than peaches?"

A MEMBER: No.

ANOTHER MEMBER: I say they did. I have got 40 acres of peaches; last year I lost a great many. But my plum trees are all right; peaches are not.

ANOTHER MEMBER: Last year we had very few peaches, and very small ones at that, but our Japan plums gave a full crop.

MR. HALE: I might say, that in one place at home where the peach trees are killed entirely, the Japan plums are only

slightly injured. They have live buds, where the peaches have all been killed.

A MEMBER: I would like to ask Mr. Hale how his "hardy" peaches are.

MR. HALE: The snow is so deep I haven't seen them for some time.

VICE PRES. HUBBARD: Our program calls for a ten-minute paper by Mr. N. S. Platt on "The Outlook for the Peach Growing Industry." We will now listen to Mr. Platt, who is well qualified to discuss this timely subject.

What is the Future Outlook for the Peach Growing Industry of Connecticut?

The demand for peaches has grown in the last forty years to large proportions.

It is not likely to be any less in the near future. It is a popular fruit, known and used by everybody.

Nothing else can quite take its place. The demand is constant, and can be depended on. How about the supply?

The supply is precarious wherever they are grown, but we believe they are as reliable here as anywhere, unless it be in California.

They can be grown cheaper, probably, on the fertile and easily tilled lands of Delaware, Georgia or California, but the question of transportation is a great and lasting impediment in the way of growers from those places reaching our northern New England markets.

The growers from those places would be willing to sacrifice much if they could get our short hauls and quick time.

Granted then, that we have a good demand and good location for marketing, what have we that we need to fear as regards overproduction?

Nothing, I believe, but a universal crop in one latitude, and that does not often happen.

We have in the State probably four or five times more bearing peach trees than there were ten years ago.

It might be argued that this number, if productive, would yield more fruit than we can find market for. I should say

no, unless our competitors in about the same latitude also have a full crop. There are so many things that work against the universal crop, such as we had in 1902, that we need not expect it to occur oftener than once in five years.

The San José scale, also, is likely to affect disastrously the crops of the next ten years, and before that time is passed it would not be surprising if we were sending volumes of peaches to Europe. For the last few years, even when peaches were scarce, it has been difficult to get more than a moderate price.

With all our labor expenses higher, and the added cost of fighting the scale, which seems certain to come to all of us, there is a probability that our profits will be diminished still more unless prices rule a little better. One prominent New Jersey grower dares to say they will be higher.

We don't want all the earth, but we hope for good crops and paying prices a part of the time, though it looks now as though the Connecticut peach crop of 1904 would be no more than half a crop.

After Mr. Platt had finished reading his paper, a lively discussion of the subject ensued.

Mr. Hale: I would like to ask one question. What is your opinion as to the range of prices for peaches in New England markets during the past five years? Has it been an increasing or decreasing price?

Mr. Platt: I thought it had been a decreasing price.

Mr. Hale: I thought so too, but at a hearing before the International Commerce Commission in December, they undertook to prove that the prices of peaches in the New England markets had been steadily increasing for the last ten years. I tried to find out where they got their figures, but could not; so far as my own figures go, the price has been decreasing and Mr. Platt says the same.

Mr. Fenn: Whether or no the price this year was equal to what has been received before. In 1903 the price was in proportion to the crop.

Mr. Hale: But the 1903 crop was not a good one. The price was nothing to go by, for it was not a market price. It was way beyond any measure of value or average. It was simply, get all you could.

MR. FENN: The first crop of peaches I raised eight or nine years ago, I did not have any trouble in getting $2.00 or $2.50 a basket. You can't get that price now; they won't give it. Even the people who have got the money won't pay such a price. I don't hesitate to say, the price is not anywhere near what it was ten years ago.

A MEMBER: Well, there are ten peach trees now where there was one then.

MR. HALE: Mr. President, in the matter of figures, our large crop of 1899 netted us $1.56 per half bushel basket, and the price has to-day declined until, in 1902, my average was a little less than 46 cents per basket. This last year was back to the old figure, $1.56, exactly.

VICE PRES. HUBBARD: Let us have more experiences from the growers. Is there anybody going to quit the peach business?

MR. BARNES: No sir, I think it is better to plant at the present time than for several years.

MR. G. H. HALE: I am not ready to quit. I am going into the business again in two or three years at the old stand.

MR. J. H. HALE: I think most growers having five hundred trees or so are going to meet with the San José scale. They don't know it, but they are going to be driven out of business, and they wont go back again. Our chairman knows that the small growers, who were the negligent ones when the peach yellows was so prevalent some years ago, failed to appreciate the value of fighting it, and many of them were driven out of business. The San José scale is about the same at this time, and I believe that 50 per cent. of the peach trees standing in orchards to-day will never bear a crop. I think 50 per cent. in the State to-day are doomed because of the San José scale.

MR. PLATT: Another thing, where the San José scale, in a good many cases, is found in the orchard, before the owner learns how to control it that scale will control the trees. I think Mr. Hale's point is a good one.

VICE PRES. HUBBARD: The program now calls for reports from growers on the present condition of peach buds. In view of the severe cold we have had this winter, so far, it will be interesting to learn the condition of the buds in the different sections of our State.

Now, let us have a brief report from each peach grower present.

Reports from Growers on the Condition of the Peach Buds.

Mr. J. N. Barnes, Wallingford: I suppose we are doing pretty well. I have been feeling pretty good over the prospects. We have from 30 to 50 per cent. live buds. In all the Wallingford orchards the owners are feeling pretty good.

President Gulley: I wish you would tell, if you know, the elevations of your orchards. I believe that is one of the most important questions. I believe the orchard that stands on an elevation of five or six hundred feet is the best protected orchard. In my own orchard, the young man and myself are watching this point. One part of our orchard stands 350 feet at the highest point. There, a large part of the buds are killed, but not in the proportion I found in other places. There is a good slope in every direction. We know just exactly where we stand. I wish these growers would give us the elevations of their orchards.

Mr. Hinman, Oxford: If elevation is the most important point, we are going to do but little. Living where I do, in the Naugatuck Valley, we have less summer than people living above us but still in the Valley. The Valley is 300 feet where I am, and a valley between hills 300 feet between tide water is vastly worse off than land at tide water, so that the elevation itself does not amount to much.

President Gulley: That is right; but I would like the elevation from the actual sea level.

Mr. Hale, South Glastonbury: In my own orchard, on the level of my house, which stands from 75 to 125 feet in elevation, not only the buds are killed but practically all the trees are killed to the snow line. At the elevation of 125 feet to 200 feet the buds are all killed and the wood is slightly injured. At the next elevation of about 250 to 300 feet there are a few live buds and no injury to the wood. And at a still higher elevation of 420 to 450 feet we have buds enough to raise a full crop. All this is within half a mile. It is a steady climb. At Seymour, 700 feet above the Sound, there are practically buds enough for a full crop, and they will be thick on some varieties. I should say there are from 30 to 50 per cent. live buds, but if there are 10 per cent. alive, it means a full crop, but this eleva-

tion business Brother Gulley brings up makes a great deal of difference in the frost. Eight degrees below zero was what the thermometer said at Seymour, but it was thirty degrees at the railroad station. So you can see the difference in temperature between the elevations is great.

MR. BARNES: That has proved true this winter. You take a still cold such as we have had this winter, and the cold seems to go down, but when there is extreme cold with high winds it goes on to the higher land.

GEORGE F. PLATT, Milford: We have an orchard near the Housatonic river. I looked yesterday, and did not find more than 5 per cent. of live buds, and many of them were undeveloped.

MR. WELTON, Plymouth: Perhaps I have had little experience in the matter of location of a small orchard which might be interesting to you. In one orchard surrounded by sprout land at an elevation of about 1,000 feet, I have noticed the buds are killed. In some varieties there are a very few live buds. In another orchard at an elevation of about 500 feet, on sloping ground, where there is nothing to prevent the frost from blowing off, they are alive.

MR. BUELL, Eastford: Around my house, where eleven degrees was the coldest we had this winter, my peach trees are all right, but in another orchard which is surrounded with hemlock trees, I am unable to find a live bud except on one tree, and this orchard is not more than forty feet lower than the house. I have another orchard down toward the lake, and last year and two years ago the buds were comparatively all right. The wood was all right, and that orchard is lower than the one where the buds were all killed surrounded by trees.

A MEMBER: Mr. Chairman, we are now getting back to the point that the mere fact of elevation has but little to do with it. It depends a great deal upon being up where the wind has a full sweep. If you can get up 100 feet where the wind can go through, you are safe.

———: Dry air doesn't freeze as a damp air will; the mere fact of elevation has but little to do with it. It is the breeze and the dry air. Mr. Hale has got a mighty windy place, but that dry, cold air doesn't freeze as the damp, still air does.

MR. GOLD: At Cornwall, where we are up 1,200 feet or 1,400 feet and have plenty of wind, as near as I can see, all the peach buds are killed.

MR. BARNES: I think there is such a thing as getting too high. If I were locating a peach orchard, I think I would look to see how high it was and also to see how it was surrounded.

MR. WARNER, North Haven: 60 per cent. of the buds were killed on a level with my house; 500 feet above, the buds were all right.

MR. HARRISON of Maryland: I have heard so much about Connecticut orchards I will say a word about Maryland. The buds, I understand, in the western part of the State are alive 1,400 feet above the sea level, but lower they are mostly killed. This is in the western part of the State of Maryland near Cumberland. We think that buds of trees on the hills are pretty hard to kill.

MR. ROOT, Farmington: In an orchard at Farmington about 500 feet above the sea level most of the buds are killed. They are right along on the crest of a mountain, and there probably 30 per cent. are alive. On the lower side the crops are all right.

MR. JACKSON, Wilton: Mr. Chairman, I would like to say that in my orchard, in the western part of the State, I can find hardly a live bud.

A MEMBER: I have four peach orchards. Running up to 75 or 100 feet, the trees are all killed; 100 to 125 the trees, buds and all, are killed; 175 to 200, the buds are killed but the trees pretty well alive; at 250 to 300 the trees are alive, and a good crop of buds.

A MEMBER: Our orchard ranges from 350 to 380 feet. I doubt if the elevation makes a very great difference in the condition of the buds. There are about 35 per cent. of the Elbertas alive.

MR. GEORGE HALE: I would like to ask if there are any others besides J. H. and G. H. Hale who have lost trees by the cold?

A MEMBER: I have found a number of trees dead or nearly so, but I think by a thorough pruning most of them can be saved.

The discussion was then drawn to a close, and at five o'clock, after one of the most interesting sessions on record, the Society adjourned until 7.30.

EVENING SESSION.

The convention met for the evening session at 7.30 o'clock, President Gulley presiding.

The Chair announced the following special committees to act during the meeting:

Committee on the Fruit Exhibit—E. Manchester, Bristol; C. A. Whitney of Massachusetts; Edwin Hoyt of New Canaan; W. E. Waller, Bridgeport; Geo. F. Platt, Milford.

Committee on Exhibit of Implements, etc.—G. G. Tillinghast, Vernon; J. T. Molumphy, Berlin, and L. P. Chamberlain, West Hartford.

On motion of Mr. L. C. Root it was voted:—That the President appoint a Committee on Nominations composed of five members, to submit a list of officers to be voted for at to-morrow's election.

President Gulley named the following as committee: J. C. Eddy, N. S. Platt, L. C. Root, Harvey Jewell, and H. B. Buell.

Remarks by Visiting Delegates.

President Gulley: We are particularly gratified to have with us at this meeting a large number of visitors from other states. I am very glad to note that each year the number of delegates from other State societies is increasing.

This exchange of delegates is a most pleasant feature of our horticultural conventions and must prove of benefit to us and to them. We want to become better acquainted with our brother growers in other states, and learn more of their conditions. It is profitable for us to discuss together the work in which we are all mutually interested. In the name of our Society, I extend a most cordial welcome to these gentlemen, and at this time I would like to call for a brief word from some of the visitors.

First, I will call upon Prof. W. J. Greene of Wooster, Ohio, who represents both the Ohio Experiment Station and the State Horticultural Society. Prof. Greene gave us some valuable points this afternoon, and we shall be pleased to hear from him again.

PROF. GREENE: If I wanted to preach a sermon, I would take that text up there—over the President's desk: "Connecticut, not the land of the *big* red apple, but the land of the *good* red apple." That is right. Last year I visited the far West, and became impressed with one fact. I knew it before, but I was not as thoroughly impressed as I was after my visit. And that is, our conditions are so different. Their conditions are altogether different from our conditions here in the East. Here in the East you and we are trying to grow something that not only *looks* good but *is* good. That is the only way we can hope to get a market.

We are trying to do that same thing in Ohio, and I believe you are trying to do it here. It seems to me we are in the same boat with you. We have got the Southwest to contend with and so have you. But perhaps you won't have so much trouble as we will. We realize just now we have got to grow something they don't grow. I came here to learn. I didn't come here to give any extended address but I came here to learn. I was very glad when I got here to-day because I knew I was in company with people who have very high ideals.

The Western Reserve, as you know, is made up largely of people from this section. Perhaps it might be boasting a little to say that we have the pick of the people out there.

A MEMBER: If you say that here you'll get hurt.

PROF. GREENE: Well, we claim, anyway, the pick of the people went out there. They say there is never an office vacant except there is an Ohio candidate. At a banquet in a neighboring state a while ago, the toastmaster introduced a gentleman from Ohio, and in doing so said he had always noticed that when there was an office open there was an Ohio candidate and generally a pretty good one. But there was one election where there was no candidate from Ohio, and that was when they elected a Pope last year. However, if that office should ever come to an Ohioan I believe he could fill it nicely.

I like to go to a meeting of this sort, and am very glad I came. I will not take more of your time, but will simply say that I am learning fast and shall tell some of the things I have learned here when I get back to Ohio.

Dr. E. P. Felt, State Entomologist of New York, spoke next, telling in an interesting way of the work in his state.

Orlando Harrison, Vice President of the Maryland State Horticultural Society, and an extensive nurseryman, gave a pleasant word of greeting from his Society, and complimented the work of the Connecticut fruit growers.

Ethelbert Bliss of Wilbraham and C. A. Whitney of Upton spoke for the Massachusetts Fruit Growers Association.

Mr. H. D. Lewis of Red Hook, N. Y., representing the New York State Fruit Growers Association, spoke briefly.

The regular program of the evening was then taken up, and the following very interesting lecture on "The Fruit Garden" was delivered by Prof. F. A. Waugh of the Department of Horticulture of the Massachusetts Agricultural College.

The Fruit Garden in its Relation to the Suburban and Farm Home.

By Prof. F. A. Waugh of Amherst, Mass.

Ladies and Gentlemen:

The subject which I am asked to talk on this evening is fruit gardening, more especially in its relationship to the suburban home; and the first thing we notice is that it is decidedly out of fashion. The fruit garden is not a thing of the present fashion. Some one has said,—I don't know whether it was J. H. Hale or Socrates—that you might as well be out of the world as out of style, but I don't believe it applies in this case. There are many people who make a business of not following the styles, and they get along very well. But this is one of the styles that I think is coming back into vogue.

Fruit gardening is a fad, and one reason why it has not been in fashion during the past fifteen years is because the whole development of fruit has been away from the fruit gardens and towards the commercial orchard. Men are now growing fruit on a large scale, and the effort has been constantly in that direction. It has influenced the fruit business, and pretty much all the discussion regarding fruit culture has been directed to this phase of the subject and away from the fruit garden. A fruit garden is something on which to spend your spare time, and is a matter of pride; but an orchard is a business proposition. It exists in order to make money for somebody. A fruit

orchard is undoubtedly a thing of beauty, and the owner certainly takes a great deal of satisfaction in it, and it appeals to his esthetic taste; but the intention is to make money.

Now fruit gardening has a different purpose, and one reason why it exists is that it gives a man a personal satisfaction and gratifies a whim. At any rate, it is not to make money. This fundamental difference in purpose is the main distinction between fruit gardening and orcharding.

As I have already referred to this as a matter of style or fashion, we might stop just at this point to note that in these garden matters there are a great many changing styles. Sometimes one kind of garden is fashionable and sometimes another. We have all heard about our grandmother's gardens, and we say, as we look at some of the gardens of to-day, that our grandmother's were old-fashioned. Therefore, we recognize that the fashion has changed between her time, in the early sixties, and ours. At the present time the style in gardens in this country is very largely known to us under two different forms. One is the suburban style, which takes an open front yard and makes an entire display in front of our house; the other is the elaborate kind which provides more ornamentation in the rear of the house and which includes dahlias and other plants. This is fashionable with fashionable people who have fashionable funds at their disposal.

But there is another kind of garden which has never been recorded in the books as a separate style of gardening, and that is the real fruit garden. That real fruit garden has always had some support in this country. If we could go into Wilder's garden or have a garden such as Andrew Jackson Downing made, then we should have before us a fine example of the garden in which the fruit dominates and is one of the principal elements. And right here I might say that the fruit garden may be very ornamental and still include a great many fruit trees. Of course a great many people suppose that ornamental gardening means dahlias, geraniums, etc.

But this is not a fair estimate of it at all, for there are a great many common plum trees, peach trees, apple trees, fine in themselves, and which give beautiful effects. They are really beautiful, and they work well into any scheme of ornamental gardening; so that when a garden is made simply for the effect

of gardening then the fruit trees are useful and ought not to be neglected.

A fruit garden, therefore, to come back to the point, may be made with the old-fashioned ideas predominating, that is, to include the fruit trees and give beauty and grace to the place. That is, the ornamental idea may prevail as well as the idea to have fruit. The first great contrast will come at the point of selecting the varieties. We have heard it preached to us that we should grow fewer and fewer varieties. I heard an eminent man talking on this subject a few days ago, and he said, "If you are going to plant apples they might just as well all be Baldwins; but if you go out to those states of Southern Missouri, Kansas, etc., they will tell you they should all be Ben Davis's; while this is open for argument, there is a very good principle involved." But that principle does not apply in the case of the fruit garden. While we should under some circumstances confine our selections to a small number of varieties, we should usually consider a number of varieties. Indeed, I think it is always advisable to have as large a number of varieties as one can care for. If one is in love with fruit he wants a number of varieties. I know a man who has 300 different kinds on his place, and I have heard him say 299 of them are worthless. But that doesn't make any difference; he gets just as much fun out of the 299 as he does out of the other. He notices them when they come into bloom, and all their different characters appeal to him. I know another man who has a very large collection of the different varieties of pear trees. He knows a good many of them are not valuable; he knows they are not a delicious pear, nor are they worth anything at all; he knows he could not sell them for anything, and yet he gets lots of pleasure out of that pear orchard.

Now look here: I know people who appear to be in their right mind; they appear to be sensible and of good judgment; yet they will go and make a collection of stamps. Now if a man has a right and finds enjoyment in collecting stamps, how much better could he do by getting up a collection of pear or apple trees? I don't know where this fad for collecting comes from, but when it comes I would rather it would be plums than stamps.

And that is why I say without any reserve that a large collection of varieties is a part of gardening. We need them for a great utilitarian purpose. A man doesn't care a snap about a large number of varieties when he is growing for market; he wants something he can make money out of. That's all right, but it isn't fruit gardening. With fruit gardening you want to begin when the apples are ready and continue it on. A method of having a long succession is one of the important things.

We find in the management of a fruit garden a great many methods and problems that do not occur in the management of an orchard. A fruit garden is on a smaller scale, and there are more varieties to look out for. Hence more questions will arise than would arise in an orchard where there are but one or two varieties and they are well known to the owner. I know a great many gardens where a man gets delight from and yet they show neglect. I know other gardens that are models of culture and yet there is not so much fun about it, for a hired or employed man does most of the work. A man that is managing his own garden does not expect to work himself to death and keep it up to the highest cultivation, but he will get lots of fun out of it just the same.

Now in a fruit garden the questions of pruning and spraying are there just the same but not to the same extent as in the orchard. They can be attended to or they may not, as the owner sees fit. The business of spraying in a garden is quite different from the orchard. A man that has a large orchard would have the best spraying pump obtainable and all the modern facilities for attending to these things and looking after the trees nicely; on the other hand, if a man has but a few trees in his yard he can hardly afford to buy an expensive spraying outfit, and consequently he has to get out in the old-fashioned way or else neglect it altogether.

One of the things which may be spoken about in the growing of a fruit garden is the fact that smaller trees are raised. I think it fair to say that the tendency among commercial fruit growers throughout the country is also toward growing smaller trees. The trees are low to the ground and the tendency seems to be this way. But a small tree belongs more particularly to the fruit garden than to the orchard. Indeed, the fruit gardens

which used to be so fashionable were made up particularly of dwarf trees, and if you should go into some of the fruit gardens of Europe at the present time you would find a large number of trees handled as dwarfs. We are coming to that in this country. Particularly when one has only a small piece of ground, then the dwarf trees are coming into fashion.

I have just now in my charge a little piece of ground on which I am spending a lot of time and getting a lot of fun out of, and I have carried this to an extreme. It is a little piece, less than one-fourth of an acre, and yet there is planted on that pears, apples, plums and peach trees to the number of 550, and in the spring we expect to have enough to bring the total up to 600. All this on one-fourth of an acre. That is carrying it to the extreme, but they are all dwarf trees, or practically all, and if we find we don't want them we can take them out.

I might say, if I were starting out to have some fun out of a garden of my own I should plant almost all dwarf trees and plant them as closely as I could. I might say, if I had a piece of ground, one-fourth of an acre, out of which I wished to make a fruit garden, I should try to make it enjoyable as far as works are concerned; I should try to have the idea of beauty as well as the idea of utility; I should expect to have them smile at me as I came out in the morning, and that would be my emolument rather than the dollar. I should expect to get a certain quantity of fruit. It might not be the very best fruit but to me it would be very sweet. In the way of pears and apples some of the needs in the dwarf line can be supplied by our American nurseries to a certain extent. Some of the leading nurserymen have the dwarf trees, sell them and propagate them. You could propagate your own after you received your first selection. So far as I am personally concerned I believe in propagating myself. You can propagate just what you want and get just what you desire. Whenever I came across an apple that appealed to me I would grow it myself. It is easy. I would follow this same practice with pears and all kinds of fruit.

I say I would have all these different things in my fruit garden and I would do a great deal of the work myself. The garden is for the pleasure of the owner, and propagating and budding is a part of the fun. It is more fun than ordering

from nurserymen and paying out your money. The trees being raised in your own way, you really own them.

Now at this late hour it would not be right for me, even if I could, to outline any system or management for dwarf trees. Indeed, before I undertook to explain to you or to grow any, let me suggest that I should inform myself rather carefully on this subject of dwarf trees. It is an interesting study and one you would all delight in.

Perhaps I have said too much about dwarf trees. They are not the only thing in the world and the greatest thing, and perhaps they are not absolutely necessary, but I want it understood I believe in these dwarf trees and I have dwelt on them because of that fact.

I believe I have said enough on this subject of the fruit garden. I have tried to tell you how I think it ought to be done, and the real value of the garden. It is something that will give you opportunity to follow out your bent along this line, and you will feel much pleasure in the management of a good fruit garden.

Following Prof. Waugh's unique address the subject was discussed as follows:

Mr. G. W. Smith of Hartford: This is a subject that rather appeals to me, for up to the present time I have been an amateur pomologist, and this is the first time I ever remember hearing this subject brought out at our meetings. I think Prof. Waugh omitted to give the amateur the credit that belongs to him for keeping up and saving from going out of existence some of the finest fruits this world produces.

I have heard Mr. Wm. C. Barry say that the best pear in the world was the Downing. Now how many men in this country ever heard of it? Not one in 10,000. Simply because there isn't enough money in raising it, and yet to eat it is one of the sweetest pears there are.

I have a little garden something like Prof. Waugh's. It has 101 apple trees, 70 pears, etc., and I get no end of pleasure out of it. I have tried to get as many different varieties as possible, and even had to send to California for one variety I wanted badly. Then I had to send to Ohio to get another. I am telling this simply to show we are indebted to the amateur gardener. I have enjoyed Prof. Waugh's address very much,

and he has taken me back to the time when there were men 50 years ago like Marshall P. Wilder, Chas Downing and those men who loved to cultivate fruit. They didn't do it for the dollar, but because they loved to do it. The work of Downing in my library on fruit culture is better than a good dictionary. And when I go out into my garden and get puzzled over something I can go into the house, take down Downing and read what he says. After that I finish my work in the garden without any doubts.

All I wish to say is we don't give enough credit to the amateur gardener for keeping up these fruit gardens.

PRESIDENT GULLEY: If there is nothing further on this topic we will take up the next number on the program, which is to be a paper by Mr. G. A. Parker of this city, the well-known Superintendent of Keeny Park. Mr. Parker is an acknowledged expert in handling land, and I am sure he will give us something valuable on a subject that may be somewhat new to many of us. I now have the pleasure of introducing to you Mr. Parker.

"The Advantages of a Map or Plan for Farms and Gardens and how to make it."

By G. A. Parker, Hartford.

The progress of the world might be measured by the ability of mankind to unite different factors into one whole, into a unit where the coördination of forces are so manipulated that they will work together for one purpose, as in the management of an army, ship, railroad, manufactory, and city, or a state government. The bringing together and adjusting the many discordant and seemingly impossible parts must either come about by accident or by a controlling force. There is not one chance in a million for accidents to produce desired results; for them we depend upon designs and plans. A design for a town or city, as a whole, is not common in the East, but common in the West, where the government has laid out many townships. The first plan of many old cities has been so altered that the original layout is scarcely discernible. Originally, Hartford was laid out in narrow strips, extending from the Connecticut river to the top of the Talcott mountains, an

unreasonable layout, and quickly lost sight of. What I want to get at is, that whatever man does for the betterment of himself he does from a preconceived purpose and plan, however crude or inadequate that plan may be, and wherever you find the work of man, you will find the marks of a purpose, and of a plan, even though the purpose may have been transitory and the plan but crude. In determining the different lands which constitute the present farms and gardens, many varied and forgotten reasons have determined their lines. The subdivisions of different farms into different fields and lots is usually, also, a forgotten history. They probably answered the purposes satisfactory to the men who laid them out, but even if they did, then it does not follow that we should continue the old sub-divisions if a different one would serve our purpose better. Now I am not advocating the shifting of the walls and fences, but I do advocate that every land owner should consider the uses to which he puts his land, and consider carefully if a different sub-division would be more desirable and more profitable to him.

The trend of the times points to unification and simplification of interest, be it trust, a workingman's union, a mercantile or mechanical business, or farming, fruit growing or gardening. The ideal is that each factor in the farming operations shall come into such relations with each other that each will receive its proportionate part of the labor at the right time and in such a way that it can be easily attended to, so that each day will bring to its owner the work that will result in the greatest profit to him. Usually friction, hurry and confusion is a confession that somewhere, at some time, there has been wanting forethought, energy or means. Of course, much depends on other things beside the sub-division of the farm, and yet, the sub-divisions may have much to do in the success of its management, the same as a well planned house has for the ease of doing housework, or a well designed and ample factory building has for the rapidity and ease in carrying on its operations. Maps of farm or garden, if used, are one of the best methods of keeping original field records. It is a pictorial method, one used when people first began to read and write, and which, during the last few years has fast supplemented, and in many places taken the place of, writing. The demands of life are now

so great that there is not time to write or to read long descriptions of those things which can be as clearly told by pictures. A map can be made not only a record, but a method of keeping memoranda, so that as far as any particular field or crop is concerned, it will show its profit or loss and the history of its work. All the arguments that can be put forward for farm book-keeping can be used for the farm map. Farm plan work, like book-keeping, requires some effort to learn, but when learned, is very helpful and profitable. We cannot build the simplest hen-coop or carry on the smallest farm without a plan, but we may have, and usually do have, that plan in our heads, and not on paper; but if we are to build a building with many rooms or carry on extensive farming economically, we will find the pencil and paper of great help.

Many consider a map or plan of their place as a sort of an ornamental appendage, which they can show to their friends and, occasionally, bring out for their own inspection, or have it framed and hung on the wall as a picture, or lay away carefully as the matter of reference, like deeds. Usually, they are made by surveyors and quite expensive. Now these kinds of plans are very desirable, and I would not belittle them, yet they are not the kind that I imagine the practical farmer would use the most. The plan which I have in mind is made on the larger sized, common wrapping paper, and made by the farmer himself with a lead pencil, and for the doing of which does not require any great knowledge of surveying. To illustrate what I mean, allow me to tell you what I did some twenty-five years ago. One spring I became the superintendent of a country place for a millionaire. The place consisted of 620 acres, and employed through the winter about a dozen men, and double that number in summer, a place which I was entirely unacquainted with, having been on it but once before, and then it was covered with snow. I found myself at the head of these men, most of them as new to the place as myself and depending upon me to direct them as to their work. I had received a brief schedule of what the owner thought might be done with the fields, and his suggestion as to crops. He spent a part of the first day with me. There was no map of the place, but as soon as the men were at work the next morning I began making one, for I felt that I must have it in order

to make estimates for the work of the different fields, and the manures and seed needed. I took with me as large a sized blank-book as would comfortably go into my pocket and a lead pencil. The house I lived in stood fairly well in the open. I took the long front side of this house as a base line; looking along it, I located an object in the distance in the same line, and walked to it, counting my steps, not pacing; that is, not taking three feet at each step, but walking naturally, for I had determined by repeated trials that forty of my ordinary steps made one hundred feet. As I passed along this line I noted in the book those objects of interest it passed through or near by and where it crossed a brook or a fence. On reaching the object seen from the house, I ranged in another object farther on and repeated until I had reached the outside boundary of the place. I walked back over the line, confirming my notes, and then located, in the same manner, an extension of this line across the place in the other direction from the house. I now had a base line which, in this particular case, passed through the fields which had to be worked at once. I drew this line on wrapping paper, adopting for a scale one-fourth inch equal to ten steps, which made a plan of 100 feet to the inch. Then I went to the field which I had to work first and through which this line passed, and by walking along its sides and diagonally across its angles,—walking over more diagonals than was really necessary, in order to check this work,—I found when I had plotted it on paper, that I had a map which fairly well balanced and sufficiently correct to make estimates as to the time needed to do the work, and the manure, seeds, etc., needed for that field. Within forty-eight hours after coming onto the place I was in possession of sufficient information, as far as map could give it, to intelligently direct the work, and by the time two weeks had gone by I had a map of each field of arable ground, by simply walking over it and counting my footsteps. By early summer, by the use of odd time only, I had a map of the entire place, showing water courses, walls and fences, woodland, orchards, pasture lands and plowed fields. I had not only a map of the place as a whole, but I had a separate map of every field: on these lesser maps I had written on the margin an account of what was then growing there, and as far as I could determine, what had grown on it during the last

few years, with its area and what seemed to me desirable to do with it. All this memoranda should be carefully dated, for the time element in all farming operations is of the utmost importance. At one time I might suppose that a particular field would grow corn best next year, but as the season went on, the physical condition of the soil and its plant growth might lead me to believe that it was not suitable for corn the coming year, or the conditions elsewhere might make it desirable that it should be planted with other crops in order to balance the work of the farm as a whole. Whenever I changed the crop upon a field I made a new plan for it, on which I made the records as to the times the different work was done in that lot, and the different materials, such as fertilizers, seeds, etc. used, and where they were obtained, and their cost. Also, at the time of the gathering of the crop, I made on this plan the record, not only of when it was harvested but the quantity that was taken from the field, giving me the data necessary to compute the profit or loss of the field.

I speak of this experience of mine to show how easily and rapidly it can be done without outside help, and without the paraphernalia of a surveyor's and draftsman's outfit, and the result is reasonably correct. The method is correct, but errors which come in from not walking in a straight line, going up hill and down vale and the variations in the length of the step would be a source of annoyance to a surveyor, but the errors are not so great as to trouble the farmer in the drawing out of the memoranda taken outdoors. For paper for these plans I used the common wrapping paper of the tradesman, eighteen by twenty-four inches in size. This paper is not thick and very cheap, only a few cents a quire, and does not take up much room to store, and the size is one that is comfortable to use on a common table. For tools, I had a two-foot carpenter's rule and a soft lead pencil.

The advantages of these numerous and frequently made plans are not confined to the increased ease in calculations, but in doing the work one's self it gives a wonderful increased knowledge of the farm itself, and what it has done and what it can do. It leads to a separation of the farm work in the farmer's mind, and leads him to give to each part a more satisfactory proportion, both as to the place it occupies and the time it takes,

and in this differentiation the home grounds should become and will become more or less distinct and separated from the other lands. Farming seems to belong to that class of occupations which by custom and convenience mixes the home and business together in a way that is detrimental to both the home and the business. It is like a shoemaker living in his factory, or a merchant in his store: small mechanics, small merchants, and small farmers may have to, in the beginning, live in a huddle, but as the success of farming increases it should be possible to separate out the home grounds, and make them distinct from farming operations, and a most attractive and delightful place to live in. In theory, the farmer should have the best home in the world, but in practice his home is apt to be surpassed by the village and the city home. A more beautiful city has come to stay, and sanitation and the fine arts are doing much to make it more attractive. Even now one city in the United States claims to have no slums, and there are cities where the death rate is less than in the country. The farmers, so far, have taken but little from the advancements that are being made, to use for themselves. True, much that is needed in the city is useless in the country, but the movement has a wider meaning. It means a realization that beauty is an important factor in our lives, in one sense fully as much so as the food we eat. If we are surrounded with it, it, as it were, soaks into us, and the heart grows from that absorption. Not all that strengthens life enters through the mouth. The better elements of growth enter through the eyes and ears; nothing is more ephemeral than music,—the sound dies away instantly when the song or the instrument stops, and yet, what a tremendous influence it exerts; and now its twin sister, beauty, which appeals to the eye as music does to the ear, and which has been long neglected by the common people, is to take her place upon the throne beside her sister, music. As every home is happier for having music in it, so every home is better when the blessings of beauty rest upon it and surround it.

I once asked a clergyman why he kept on preaching week after week, saying that sermons were usually forgotten before the week was out, and very, very few remembered them a year. "Young man," he said, for I was young when I asked that question, "do you remember the dinner you ate a year ago?"

I had to confess that I did not, neither could I tell what my dinner was a month or a week ago. And then he added: "Those dinners, even though forgotten, were necessary in order that you should be alive and well now. My sermons, even though forgotten, were needed and I had to do my best a year ago that I might be able to do as well as I do now, for if I do not do my best to-day, I cannot do better to-morrow." And so, a farmer's home should be a little paradise on earth, and it can become so, and I believe that it will be when he succeeds in working out a logical plan for his farm and a reasonable method of working it. He will have learned to make and use plans as easily and comfortably as he reads and writes, and the making of a plan will be as simple a matter as writing a letter; then he will have them in abundance, and will have them as frequently as he makes a memorandum, and the more familiar he is with them the more useful they will be to him.

I cannot help, in closing, in giving voice to a little prophecy. The plans of cities are receiving a great deal of attention, and cities are being slowly remodelled to meet modern requirements, and while many of the country roads are as well located, and as beautiful as heart could wish, yet there are others which are not logical in their layout, and impose as great a burden on the farmer as the illogical city streets has upon the business man. Then again, most farm lines are not the result of following reasonable contours, and enclosing the lands which naturally go together, but are usually the results of accidental ownerships in the past, the wealth and poverty of other owners, and the idiosyncrasies of the neighborhood. How much of this can be changed for the better, I do not know, but as we have park commissioners in cities, so I believe the time will come when there will be commissions appointed to guide the conserving and preserving of whatsoever is beautiful in the country—that beauty which belongs to no individual owner, but to every one who has eyes to see; and he who destroys the beautiful destroys public property, even though he holds the title deed, and he who makes the beautiful more available, who adds to it by making his grounds more beautiful, has added to the public wealth, and has done the Creator as well as his neighbor a service of even greater benefit than that he himself will receive.

Mr. Parker's admirable paper was attentively listened to, and at its close the matter was discussed at some length.

Vice President Hubbard in the chair.

Mr. Hubbard: I want to say that I believe the suggestion contained in Mr. Parker's paper, if carried out, would be a benefit to every farmer in the State. If a farmer can make his own plans, as Mr. Parker says, it seems to me entirely practicable that he should do so. Each farmer would have a greater familiarity with his different fields and he would get a better idea of what to do the next season.

A Member: I would like to ask Mr. Parker if he would include in that map, a map of his orchard.

Mr. Parker: Yes, sir; all the land upon the farm, the house, the orchard, and everything. All that a man owns and all that he hopes to own.

A Member: What method do you use to get the angles? When it comes to laying out farms, fields, etc., you need angles. How do you get them?

Mr. Parker: The angles are determined by the measurement of three sides. There is no trouble at all with the angles.

Mr. Hale: I think Mr. Parker has given us a new idea as to a farm map. I believe with him every farm in the country can be mapped, and I believe it can be better mapped and cared for as the years go by if we have a map of each individual field and a record of its work. I have always supposed that to get a decent sort of map you have got to have a lot of surveying done, and that is expensive. Mr. Parker is a man who can walk over a piece of ground and then he knows pretty well how the land lays. But I would like to ask him one question, and that is, how he gets his elevation?

Mr. Parker: I never tried it.

Mr. Hale: Well, in the ordinary map I don't suppose it is absolutely necessary. The average farmer knows the contour of his land and the elevation. It seems to me that the plan laid down by Mr. Parker to-night in a very sensible one, and as intelligently presented as any suggestion I have ever heard regarding how to get a good practical map. It seems to me we ought to be thankful that a man who knows how to handle land should come here and address us.

PROF. WAUGH: Mr. Chairman, if I may say a word, I would like to state that I think Mr. Parker's ideas are excellent. But I have a little scheme of my own for this matter and would like to tell you about it. Now, a good surveying instrument you can buy, one which is suitable for all this work, and a level with a horizontal line for turning off the angles, and stakes for reading the elevations, and you can buy this whole outfit for $16. That is not an outlay beyond the means of any farmer around here. You have boys on your farms, and any good bright boy can soon learn how to handle this instrument; then, too, he can get a lot of fun out of it. I have gone over my father's land with an instrument of this sort and thought it would be a fine thing to map out the farm at home. I borrowed a transit weighing about 150 pounds and surveyed the whole place. I enjoyed it very much, and I know the boys on your different farms would also. They can make a good survey.

It was decided to defer the address of Mr. Hoyt on "Coöperation" until Wednesday's session, and in its place a number of questions from the printed list were called up and discussed.

QUESTION 1. The future selling package for the apple—shall it be box or barrel?

MR. ROBERTSON: I think, Mr. Chairman, the box is the coming thing.

MR. LEWIS: I should think that would depend altogether upon the quality of the fruit to be sold.

PRESIDENT GULLEY: Mr. Chairman, we have been told it is doubtful which would work best, the box or the barrel. Now, I know of one man who has given this a thorough trial. He packed some apples in a box and some in a barrel and made shipment. The result was that in every case of first grade fruit the profit of the box over the barrel averaged 75 cents for the same amount of apples. The average of three or four shipments was just about this margin with just one offset; it took just a little more work to pack the box than the barrel.

MR. WALLER: I would like to ask the cost of the box itself.

PRESIDENT GULLEY: In this test I speak about we had some very nice boxes. They were neat and plain and the cost was very little.

PROF. WAUGH: I was going to say, Mr. Patch, the Boston commission man, was telling us a few weeks ago about this question, and he very emphatically said the apple barrel was the best thing; he is opposed to the boxes.

MR. FENN: I think when the public demands the box it has got to come. When that time arrives we have got to have the box, but until that time I don't think we ought to impose it upon them. I was foolish enough to invest in 200 boxes a few years ago. I sold more to Prof. Gulley than anybody else; and for the very reason I did not find buyers who would take the apples in boxes. I could not find a buyer who would pay the price. That was the first objection.

MR. HOYT: There was a case right along this line that came under my own observation. A gentleman in Westchester County, N. Y., who bought apples and peaches and sold them in New York. He came out to our place one day and I was speaking to him about the bushel box for apples. I gave him my ideas about the advisability of packing them nicely in boxes of about a bushel. I thought no more about it until about Thanksgiving time, when I had a telephone from him one Sunday telling me to pack my apples in boxes. I had about a thousand bushels in Maine, and I packed my nicest apples in boxes and went down with him to Seigel-Cooper's big store in New York. We asked them if they wanted any apples, and they said: "No, we can buy all we want here in New York for a dollar and a half a barrel." But I said we had them in boxes nicely packed. They said they'd like to see a sample. So I sent down a dozen boxes and when they saw them they asked how many I had. I said I had a thousand, and they said they'd take them all. Now, if you will look in the *Herald* you will see in Seigel-Cooper's advertisement that they are selling those apples for $1.45 a box.

You say here you don't want to impose them upon the people. But the people want to see them in boxes and then they'll buy. The supply will make the demand. Put your apples in nice cases and the market will take them. They don't ask for the boxes because they are not acquainted with them. They take what you give.

MR. SEYMOUR: I am very much interested in all these things. I have spent nearly five years on the Pacific coast and I have

yet to see the first apples put up in barrels on the Pacific coast. They won't use barrels. They claim they are not convenient, and they can't sell so many apples in barrels because they are not in a shape people can buy. Lots of people won't buy a barrel of apples when they will buy a box. They want a smaller quantity and the box just fills the bill.

Mr. Robertson: I would like to add that in the winter people in the city have no place to keep these apples. The heat of the cellars make it impossible to keep apples in good shape. They lose their flavor and shrivel up. If we could put them in ½ bushel boxes we might increase the sales very largely.

I second what the gentleman on my right has said. The box has got to come for our best fruit.

The time having arrived for closing the session, at 9.30 the Society adjourned until the following day, after a very pleasant and profitable evening meeting.

The attendance was good, although not as large as at the day session, as many of the members were unable to remain through the entire meeting.

Second Day---Wednesday, Feb. 3.

Morning Session.

The second day of the Pomological meeting started off with an excellent attendance and with an increasing interest in the proceedings as the meeting progressed.

President Gulley called the Society to order at 9.45 A. M., and after several announcements from the chair, Mr. E. R. Bennett was called upon and gave a further explanation of how to make a successful Bordeaux mixture.

Questions from the List and from the Question Box were then taken up and discussed.

QUESTION: What is the best nozzle to use in spraying tall trees?

Mr. Barnes said he used the Vermorel and liked it.

MR. HALE: I have been spraying peach trees mostly. Have found nothing better than the Vermorel until this year, when at the meeting of the New York Fruit Growers' Association at Geneva there was a new nozzle shown by the Goulds Company, called "the Mistry," and a number of us tested it there for a long time along with Vermorel and other nozzles, and I think it is an improvement over the Vermorel. From what I saw in using it in Georgia, I shall substitute it for the Vermorel. It makes a finer spray, scatters over a wider range, and so is more economical of the spray.

Mr. Fenn and Mr. Ives both recommended the McGowan for work on tall trees.

QUESTION: Can the "brown-spot" on the apple be prevented by spraying?

Mr. Ives said he was not prepared to say certainly that it could, but we can spray later in the season with weak Bordeaux, spraying even up to picking time and then wiping off the fruit to remove any effects of the spray. In this way we ought to be able to control the trouble.

PRESIDENT GULLEY: Some of those western men suggest spraying right up to picking. From some work we did last year I am persuaded that fungus can be kept down, but it means later work than for other troubles.

A question relative to cutting back and heading in peach trees provoked a vigorous discussion.

Mr. G. F. Platt favored cutting back with the idea of forcing the growth of new heads.

Mr. Root had cut back Reeves' Favorite trees with good results and expects to practice it this year again.

QUESTION: Assuming that our peach buds are all dead, would this not be a good time to cut the tops off from peach trees over six years of age? Could it harm them?

MR. PLATT: I think I would recommend it. If they are killed anyhow, we might as well cut it off to begin with, and make a new head. I think Mr. Hale did that thing in Georgia and got a second growth.

MR. ROOT: I suspect we ought to trim ten-year-old trees right back.

A MEMBER: Will you do it?

MR. ROOT: Yes, sir.

MR. BARNES: We cut back about 550 trees last spring quite severely—limbs that would range in diameter from three inches down to half an inch—the tree was cut off very severely if the diameter was two and a half or three; and with the exception of some trees that the scale was very severe on, these put out in the spring and made a very satisfactory growth through the summer. My main object was to never let those trees get high. In an examination that I made in cutting for the buds, I could not make up my mind that there was any damage this winter. We did not get the severe cold on these orchards that prevailed on the lower ground. I might say that we have a couple of trees on the flats near our buildings that were on the place when I came there. They have always stood in grass—they may be twenty years old; and I went out this morning about daylight and I took a branch off from the top of each of those trees and took them into the house, and I cut the wood and the buds, and the buds, so far as I could detect, were, without exception, black in the center, and the wood is very brown, even of this last season's growth; and I think it has killed those old trees that had made a very moderate growth.

A MEMBER: What time would it be best to cut back those trees?

Mr. Barnes: I should prefer to do it as near leaving-out time as I could, but I see no great objection to doing it at any time. We commenced last year not later than this time,—we had to pick out weather a little; but begin now if you are ready.

A Member: Why wait?

Mr. Barnes: If you should cut a limb and expose it to the weather before the healing process could go on, it might be detrimental.

Mr. Warner told of cutting back an eleven-year-old orchard in April. The trees made a fine growth and have come through the winter in good shape.

Mr. Hale asked what to do with peach trees four to eight years old, killed down to the snow line this winter. Is there any hope of saving them by sawing back the trunks?

One member said, saw them off and the trunks will start a new growth.

Mr. Wakeman pointed out the fact that such trees will be likely to split later on.

Mr. Liegey: I have trees that were frozen, and I have been cutting them down six inches above ground—just a couple of inches below the frozen part. They will start and make a good tree; and I would bet anything you can get a good crop of fruit two years from now.

Mr. Root: We once had a few young trees, three years old, broken off by the ice storm, that did not one of them sprout out to be of any use.

Mr. Platt: We have cut trees off perhaps six inches high, and the sprouts never amounted to anything.

Mr. Barnes: We have had a good many trees broken down from winds and ice, and I feel that the hope is very small, indeed, of getting anything from trees damaged, from any cause, so near the ground.

The regular program of the session was then taken up, the first subject being "The Fight against the San José Scale." This was perhaps the most important topic of the entire meeting, and one vitally affecting the interests of every fruit grower present.

The first speaker was Prof. W. E. Britton, State Entomologist, who delivered the following excellent address:

Fighting the San José Scale-Insect. The Latest and most Effective Sprays.

By Prof. W. E. Britton.

The ideal spray for killing this destructive insect should have these requirements:

1. Cheapness of materials.
2. Ease of preparation.
3. Effectiveness in killing insects.
4. Not injurious to trees.

Such a spray has not yet been found. Formerly, whale-oil soap was used and recommended, but this was too expensive and was not very easy to prepare. The oils, especially crude oil, are fairly cheap, are easy to apply, and are certainly effective as an insecticide, but are liable to cause injury to the trees, and therefore we cannot recommend their use. Many trees in Connecticut have been sprayed with oils during the past four years without apparent injury. Both kerosene and crude oil have been employed, and each has been used undiluted and in 25 per cent. mixture with water. On the other hand, many trees have been seriously damaged by the oils in Connecticut and in other States, notably Ohio. The pumps that mix oil and water cannot be relied upon to give the proper percentage of oil, and at times nearly clear water is being sprayed upon the tree and then perhaps clear oil. These pumps may work nicely when new, but after being stored for a season will not do satisfactory work, even if taken apart and cleaned and the valves packed.

The lime, sulphur and salt mixture combines cheapness of materials, effectiveness, and is non-injurious to the trees—but it is not as yet as easy to prepare as some other mixtures. Over 40,000 trees in Connecticut were sprayed with some form of this mixture last season with generally satisfactory results. In our own spraying tests about 11,500 trees were treated, with the result that the scale was well controlled in most cases and the trees were all benefited by the treatment. I feel that we must work along the line of cheapening this mixture and making it more easy to prepare. Our experiments during the past season showed: (1) that the scale can be controlled by a single

thorough spraying, (2) that salt is useless both in making the mixture effective, and in making it stick upon the trees, (3) by the use of liver of sulphur (potassium sulphide) we can make an effective mixture without the trouble and expense of boiling, (4) lime and water (whitewash) is ineffective in killing the scale and does not stick well upon the trees, (5) strong Bordeaux mixture is not effective in killing the scales, though it adheres nicely to the trees.

Other experiments show: (1) that we can use a smaller quantity of lime, (2) that less boiling may suffice.

From the points gained in conducting these experiments, then, we shall make up a mixture without salt, containing less lime, and boiled for a shorter time than we have supposed necessary. We can begin to practice economy in the preparation of the mixture by adding the sulphur before slaking the lime, and thus utilizing the heat of the lime in slaking to help dissolve the sulphur.

Recent Experiments in Fall Spraying with Lime and Sulphur.

Following the indications of last season's experiments which I have just mentioned, we can suggest the following formula:

Lime	14 pounds.
Sulphur	14 pounds.
Water	40 gallons.

A mixture prepared after this formula was used at Bridgeport on plum, pear and peach trees on December 10th. The sulphur was made into the form of a paste and put with the lime before slaking the latter. These materials were placed in the barrel, and the lime slaked carefully. By this method we can utilize the heat of the lime in slaking to help dissolve the sulphur, and a slight amount is dissolved by the slaking of the lime. Water was added to make the barrel about one-third part full. Steam from a Bigelow boiler, used for sawing wood in a wood yard, was then conducted into the barrel through a rubber hose connected with the safety valve. The boiler could then be used for sawing wood, while we were cooking the mixture, and almost no pipe connections were required.

After the mixture began to boil, we cooked it for thirty minutes, then strained it into the spray barrel and filled the barrel with cold water, and applied to the trees.

Peach trees sprayed with lime and sulphur. Orchard of A. E. Plant & Son, Branford.

View in orchard of A. E. Plant & Son, Branford.

Some of the spraying was done on Friday, and a very heavy rain came on Saturday night and Sunday morning. We were afraid that the spray had not dried sufficiently upon the trees, and that it would be washed off. Such was not the case, and when I saw these trees a few days ago they looked just as white as if freshly sprayed. An examination of the twigs indicates that the mixture will be effective in destroying the scales.

From our present knowledge, it seems wise to depend upon lime and sulphur for this season, at least, as a spray to destroy the scale in our commercial orchards.

Many of you have doubtless read of the attempts to prepare this mixture without boiling. These are mostly in the experimental stage and should be given further trial before we can recommend their extensive use.

Lime and Sulphide of Potash.

This mixture is an ideal one, as has already been stated, but is too expensive for orchard use. It may be prepared as follows:

Lime	1 pound.
Sulphide of potash (liver of sulphur)	1 pound.
Water	2 gallons (1 pailful).

The sulphide may be dissolved in water, in a pail or basin, the lime slaked and the two substances put together and diluted to the correct proportions. Sulphide of potash or liver of sulphur may be obtained from any druggist and costs 12 or 14 cents per pound. The price is so high as to prohibit its use on a large scale, but for spraying a few small trees or shrubs in the back yard of a city or town lot without the trouble of boiling, there is probably no better or more convenient preparation.

In our experiments this mixture adhered to the trees and destroyed the scale about equally with the boiled mixture.

Liver of sulphur has long been used as a fungicide.

Sulphide of Soda.

Knowing that preparations of soda usually are cheaper than potash preparation and have a similar action, I have been looking about for an inexpensive commercial product of sulphide

of soda that could be used in place of the liver of sulphur. Such a product was found to be on the market in two forms. One form in crystals contains about thirty per cent. of sulphide, and can be purchased for one and three-fourths cents per pound, f. o. b., at New York. The other comes in a fused form, contains nearly 60 per cent. of sulphide and costs two and three-fourths cents per pound. This, of course, needs to be pulverized or ground before it can be used to advantage as it will not dissolve readily in the lumps. When pulverized it is very readily soluble. We have used some of this sulphide on a few trees, in the following quantities:

Lime	20 pounds.
Sulphide of soda	20 pounds.
Water	40 gallons.

The sulphide was broken up into small pieces no larger than hickory nuts, and added to the lime before slaking. These were wholly dissolved in the process of slaking the lime. This mixture seemed to stick fairly well upon the trees and is apparently killing the scales. One fault of this mixture is its strong caustic properties, making it bad to handle—even worse than the lime and sulphur mixtures. But we can reduce the causticity of the sulphide of soda solution by using it as a solvent for flowers of sulphur. In it the sulphur dissolves quite readily even without heat. You have heard about dissolving sulphur by means of caustic soda, but when cold the sulphide of soda will dissolve considerably more sulphur than the caustic soda. When hot, however, the caustic will dissolve more than the sulphide. But we are trying to find a mixture that we can prepare entirely without hot water or boiling. The sulphide of soda is certainly a promising material, but we cannot recommend it as yet—it must be given further trial. We expect to test it in several different ways the coming season.

It has been suggested that possibly the crystallized form may be used instead of the fused, though it contains much less sulphur, but in a small test made in December this did not seem to adhere as well as the fused.

Lime, Sulphur and Caustic Soda.

This preparation has been developed at the New York Experiment Station at Geneva, and is the result of attempts to make

a satisfactory mixture without boiling. The quantities used are as follows:

Lime	40 pounds.
Sulphur	20 pounds.
Caustic soda	5 to 10 pounds.
Water	60 gallons.

The lime is slaked, and the sulphur added in the form of a paste while the lime is slaking. These are thoroughly mixed and the caustic added. Hot water is used for slaking the lime and for dissolving the caustic soda. The heat makes the caustic very active in dissolving the sulphur. Slaking lime is probably hotter than boiling water and a larger quantity of lime is used, doubtless for the purpose of generating heat. This is also a promising mixture, but the methods of preparation should be further developed before it can be easily used in the large orchard.

Mr. Brown's Method.

Some of you have heard of the mixture used by Mr. A. N. Brown of Delaware, prepared by putting 40 pounds of lime into a barrel with 20 pounds of sulphur and adding 12 gallons of boiling water. The barrel is then covered with blankets to keep in the heat, and the mixture is allowed to cook for twenty minutes, with only enough stirring to prevent the lime from "burning" while slaking. The mixture is then diluted and applied. Mr. Brown seems to think that the sulphur is entirely dissolved in this process, but it does not seem possible; and perhaps it may not be necessary to dissolve the whole quantity. If a portion is dissolved, the mixture may be quite effective.

One difficulty with both of the two mixtures last mentioned is that hot water is required in their preparation. If we are obliged to use kettles or a boiler to heat the water, we might almost as well boil the spray mixture, for then we can use much less lime and do away entirely with the caustic soda, thus cutting down the cost of the raw materials.

Caustic Soda Solution.

Many of you have doubtless read the account of this material in the last number of the *Farm Journal.* A man in California

has been using the solution, 1 pound of 78 per cent. caustic soda in 6 gallons of water, and claims great things for it. The *Journal* calls attention to the matter as if it were an entirely new idea. In the spring of 1901, three years ago, we used caustic soda for this purpose. To be sure, only a few pear trees were sprayed with it and "Babbitt's Potash or Lye" was the source of the caustic. While sold as potash, this material is really composed of caustic soda, which is much cheaper than caustic potash and can be substituted for it in nearly all operations. The per cent. purity of the lye was not determined, but 1 pound to 4 gallons was used, a stronger solution than was employed in the California tests. Something like 12 per cent. of insects came through the treatment alive. There was no injury to the trees. The record of the test was published in Bulletin 136 of the Connecticut Agricultural Experiment Station, page 6. We did not further test the solution because we considered other things more promising, especially the lime, sulphur and salt mixtures, and at that time we were using the oils as a basis for comparing results. Very little injury from the use of oils had then been recorded. Next to the oils, the caustic soda is probably the best thing for penetrating the layer of insects on the bark and wetting the twigs. Of course the soda solution will wash from the trees with the first rain, but its action is, doubtless, much more immediate and less gradual than the lime and sulphur mixtures. I regard it as worth experimenting with and shall use it in my own experimental work this season.

In concluding, I will again state that for this season we must rely upon the boiled lime and sulphur mixture to destroy the scales in our orchards. These other materials may be tried in an experimental way, but it is yet too early to put our trust in uncertainties when there is so much at stake.

I am confident that we shall soon find an effective and inexpensive mixture that can be prepared without the trouble of boiling.

Following this very comprehensive address a vigorous discussion ensued.

Discussion.

Mr. Hale: What sort of stirring apparatus do you use to make sulphur and water into a paste?

PROF. BRITTON: Our hands. Of course, on a large scale it might be necessary to devise some apparatus, but we were making up only a barrel at a time. We put warm water in the pail and threw in four or five pounds of sulphur,—it takes perhaps fifteen minutes to mix 14 pounds of sulphur,—then we put it into the barrel with the lime and slaked the lime, stirring it to make sure it was thoroughly slaked. We added water to make the barrel perhaps a third-part full, turned on steam with the rubber hose, and boiled it for thirty minutes. The sulphur was all dissolved and there was very little sediment, but we strained it into our spraying-barrel and filled the barrel up, diluting with water, then applied it at once to the trees. We had a very heavy rain Sunday morning; this spraying was done Thursday and Friday, but, so far as I can see, the trees are just as white as the day after it was applied, and it has adhered very nicely to the trees and appears to be killing the scale all right.

QUESTION: A thirty minutes boil?

PROF. BRITTON: Yes, sir. We didn't make any chemical test, but I believe all the sulphur was dissolved; we got a very dark-colored liquid. It should be nearly all dissolved.

[At this point Prof. Britton exhibited specimens of caustic soda in glass jars.]

This caustic soda may contain a little carbonate, but you can't afford to buy a chemically pure article. In this case I ordered soda 78 per cent. pure. They wrote that they could send me 74 per cent. instead of 78, and on the bill it was marked 98 per cent., and I don't know which we got.

MR. STONE: Where did you get it?

PROF. BRITTON: Through the General Chemical Company of New York City. They had it shipped from the Thomsen Chemical Co., of Baltimore. It is certainly a cheap material, and I believe it is worth further trial. It has one advantage, the ability to cover a tree with it very readily. It comes next to the oils in that respect.

MR. STONE: How long ago did you use that?

PROF. BRITTON: In March, 1901.

MR. STONE: Why did you not use that instead of the lime and sulphur?

PROF. BRITTON: I thought it would wash off. I will say, however, I am going to use it more extensively the coming spring.

MR. STONE: Why not add that to your lime and sulphur? What would be the objection, except cost?

PROF. BRITTON: I don't see any. We have only tried it without boiling; we have not put it into the boiled mixture.

QUESTION: Will you try it before next year?

PROF. BRITTON: Yes.

QUESTION: Will caustic soda injure rubber hose?

PROF. BRITTON: I think it will after a time.

QUESTION: Would you put in the soda before boiling?

PROF. BRITTON: I should try it both ways. One point, however, is worth mentioning. I don't believe that caustic soda and lime would be worth much as a fungicide, while the lime, sulphur and salt mixture has considerable value.

MR. STONE: Why not kill the scale with caustic soda and the fungi with Bordeaux mixture.

PROF. BRITTON: If we can do both with the same mixture at a single operation we shall save considerable expense.

MR. STONE: Why not add caustic soda to Bordeaux mixture for this purpose?

PROF. BRITTON: We can perhaps try adding it to the Bordeaux mixture. We are hunting for the advantages and disadvantages in all these things. If we can get a good insecticide which is also a good fungicide, we should use that on general principles. In our spraying with caustic soda, we got something like 12 per cent. of living insects that came through the treatment. That does not mean very much. It shows that it will kill some of them, and its effectiveness perhaps would depend somewhat upon the weather and whether it washed off or stayed on for a long time.

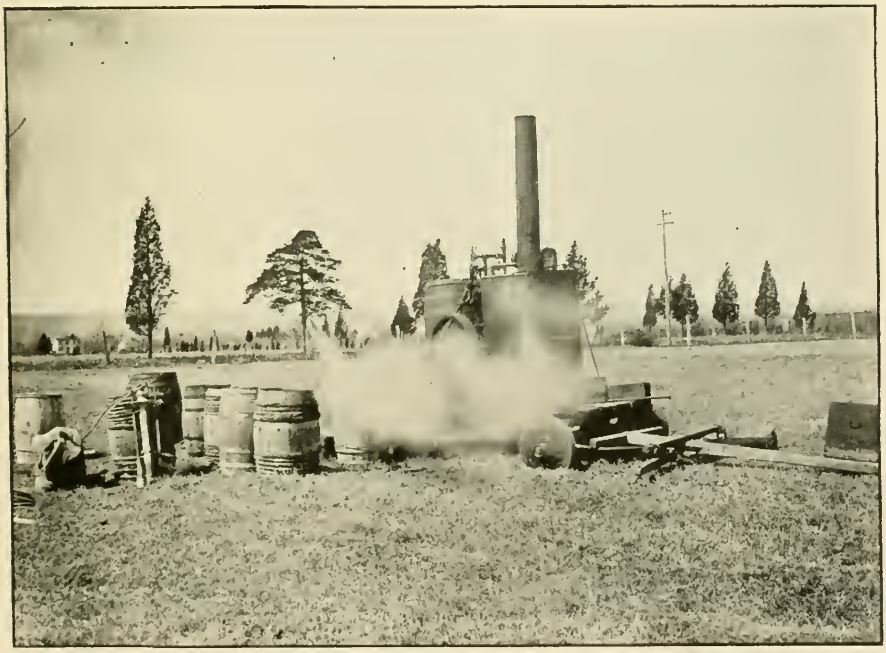
QUESTION: Will caustic soda kill the insects inside of an hour or so?

PROF. BRITTON: It will, perhaps, where it comes in contact with the insect; but where you have several layers over the bark it may be some time before it gets down to the bark.

A MEMBER: I can mention the case of Mr. Keller in Delaware. He uses simply the Bordeaux mixture.

PROF. BRITTON: We made a few trials of copper sulphate with the lime, sulphur and salt. In one case it did not stick

Spraying infested pear orchard.



Cooking the lime and sulphur mixture with steam in open barrels.

well; in another it did, and killed the scale fairly well, but it is a comparatively expensive material. Here is a sample of the fused sulphide of soda which I have mentioned. [Exhibited specimen of sulphide of soda, price 2¾ cents a pound.] In this lump form you cannot use it very well; but you can buy it from the Adler Chemical Company, who promise to grind it at a small expense, making it cost slightly over 3 cents a pound. We find it somewhat hard on the hands. I believe it to be a promising thing, and one that is worth testing, but it is too early to recommend it in a general way.

I should not advise any great outlay of apparatus for boiling. I think we can get rid of boiling after two or three years more experimenting. It is a very simple matter to hire a portable boiler for a few days. It is not necessary to have iron pipes. Have your connections and valve, and screw on rubber hose and run into the barrel. Have it so that you can shut it off from any particular tank. Use some piece of worn-out rubber hose.

Baron Von Herff: I do not think it would be necessary to use a steam boiler. The solution can be boiled in iron kettles. Much less water would be more economical than to use twenty gallons of water—half a barrel.

Prof. Britton: I intended to say a third of a barrel. We think it dissolves faster than with a very little.

Baron Von Herff: I think one-sixth of a barrel boiled with the lime and sulphur would be cheaper. It is well known that chemical combination takes place more readily in concentrated solutions. The converting of the sulphur into sulphides takes place more readily. What you want is not free lime, but sulphide; the chemical combination of the two is what is effective. It does not kill the scale outright, but some of it settles in the crevices of the bark. It remains there, and it is probable that in course of time sulphuret of hydrogen develops, which kills the young scale. The ordinary caustic sodas will not take the place of this solution. They do not develop anything,—they kill by contact. They may kill the scale where they touch it, but they will not suppress the scale. It is quite possible to mix this lime and sulphur beforehand and keep it in a solid condition and use it whenever you get ready. It forms crystals which can be kept, and you can dissolve these. Any one can prepare it by making this mixture rather concentrated. It will form crystals which can be kept and used later on.

Experiments in Spraying for the Scale.

WORK IN THE HALE ORCHARDS.

By E. R. Bennett, Storrs Experiment Station.

I know of no better way to treat this subject than to give you a short account of the work done last spring in treating 11,000 peach and plum trees for San José scale at Mr. J. H. Hale's. Mr. Hale's object in this work was to kill the scale. Our object was to note the effect of the use of the sulphur, lime and salt mixture on the scale, the trees and the men, when the application was made to the trees under different conditions and with different strengths of solution. We also wished to determine the cost of treatment when the work was done on a commercial basis.

The equipment for this work consisted of one 20-horse power steam boiler with pipes leading into six barrels. Four of these were used to boil the sulphur, lime and salt, the other two for heating water. A near-by hydrant supplied water both for filling the steam boiler and for making the solution. Two Eclipse pumps mounted on barrels were used; each pump having two lines of hose and double Vermorel nozzle attachments. Seneca nozzles were tried, but were not found as satisfactory as the double Vermorel. They did not spread the spray enough, consequently causing a loss of time. After a short time it was found advisable to have a third pump and barrel to avoid loss of time from pumps getting out of order.

Three men and a horse were used with each pump, two men to make the solution, and when the trees to be sprayed were far away from the boiler a man with a horse and wagon were used to haul the solution from the boiler to the pumps,—in all making nine men and three horses.

Details of making the mixture—The mixture was made in all possible ways. First, 30 pounds of lime was slaked with boiling water, and reduced to a pasty mass; then 30 pounds of sulphur was added and thoroughly mixed, after which enough water was added to thin the material and the steam turned on. After boiling about one hour, 15 pounds of salt was added and the whole mass boiled fifteen minutes more. Then the barrel was filled with hot water and the material was applied to the

trees. All material applied was boiling hot when it left the boiling apparatus. This formula made a rather thick mass of solution and was rather expensive, so a weaker solution was tried. This formula, 20 pounds lime, 20 pounds sulphur, 15 pounds of salt to 50 gallons of water, made a thinner solution and did not make quite so thick a coat on the trees. Then 25 pounds of lime, 20 pounds of sulphur, and 15 pounds of salt to 50 gallons of water were used. This gave a mixture that appeared just as good as the first formula. From the amount of sulphur left undissolved in the bottom of the barrels when equal amounts of sulphur and lime were used, it was evident that to utilize all the material in the best possible manner more lime than sulphur should be used.

Time of cooking—At first the material was boiled at least one hour before the salt was added, then at least fifteen minutes more, but it was found that with a good head of steam, i. e., five to forty pounds, there was no perceptible change in the solution after from thirty to forty-five minutes. Neither was any difference detected when the salt was added after the lime and sulphur had been boiled, or when all three ingredients were put into the barrels together and boiled. The conclusions were that the solution should be boiled until it became a dark amber color. Stirring with a hoe or other implement was found necessary while the solution was boiling, because without thorough stirring several times the sulphur and lime settled to the bottom of the barrels and were not readily dissolved. After continued boiling the solution became a very dark green and had a tendency to form sticky precipitate, which gave some trouble in straining.

After the solution is made it should be applied within a few hours, as insoluble crystals of sulphur rapidly form in the solution after standing and getting cold, and cause much trouble by clogging the pumps.

Effect of the solution on men—The writer has heard the statement made several times that the sulphur, lime and salt solution would cause sores on the hands and faces of the operators. To avoid danger of this, oilskin suits with rubber gloves were used by all the men. With these precautions more or less of the solution came in contact with the hands and faces of the men, but no serious results came from it even when continued for a number of consecutive days.

Record of work—Work was begun March 10. The weather was cool and clear. Four barrels of solution were used covering 264 four-year old peach trees and plum trees. The formula used was:

Lime	30 pounds.
Sulphur	30 pounds.
Salt	15 pounds.
Water	50 gallons.

March 11th, a heavy rain fell all day so that no work was done. March 12th, the rain of March 11th had no apparent effect on the coating of spray on the trees. Some solution made March 10th, kept forty-eight hours, could not be used because of the crystals clogging the pumps. Work was continued in this way until April 14th, at which time some of the plums were in full bloom, and all buds were started. No harm came from spraying the trees after the buds were started except in cases where they were unfolded enough to expose the young leaves, in which case they were burned considerably.

April 4th, spraying was done during a light rain which kept the trees continually wet. This was not satisfactory, as the material did not stick to the trees.

The Oregon Formula—In Oregon, copper sulphate has been added to the sulphur, lime and salt solution for the purpose of making it a fungicide as well as an insecticide, hence the sulphur, lime and salt solution plus copper sulphate is known as the Oregon solution or Oregon formula. The material used was the same strength as before (20 pounds of sulphur, 25 pounds of lime, 15 pounds of salt), with 4 pounds of copper sulphate added to it. When the copper sulphate was added to the other material in a concentrated solution, it formed a heavy black precipitate like coffee grounds, which caused considerable trouble in straining. A more dilute solution of the sulphate did not give this trouble. This solution was not materially different in application from the other formula, excepting that it was somewhat thicker. In effects this wash seems to be no different from the other. It is quite probable that the addition of copper sulphate to the sulphur, lime and salt does no harm, and whether it improves it as a fungicide or not, our experiments have not yet demonstrated.

Thoroughness of application necessary for success—In doing this work great care was taken that every part of the trees were covered with the solution, yet it was found that with using all the care possible many spots on the trees were left untouched by the solution as it does not show well while the trees are wet from the spray. A day or two after the application, all the untouched spots become very noticeable owing to the difference in color, as the solution on becoming thoroughly dry turns a yellowish white, making it very conspicuous. After the trees had all been sprayed, one and one half days were spent in going over the orchard a second time and covering all places that were missed at the first application. The time spent this way was short as compared with the time spent in making the first application, which took twenty-one full days.

This retouching is very important, as a few small places on a tree left without spraying may leave enough scale to reëstablish the pest in a short time. The trees had been thoroughly pruned previous to the spraying, without which, thorough spraying would have been much more difficult.

Frequent rains occurred during the time the work was being done, but these seemed to have practically no effect on the solution where it had become thoroughly dry on the trees.

The time spray remains on the trees—At the end of the spraying the trees first sprayed were as white as those recently sprayed, and at the end of three months a good coat of spray adhered to the trees. In other orchards that have been sprayed with the same material, a considerable coat of spray could be detected at the end of one year.

Cost of spraying—Cost of treatment is always an important factor in deciding what remedy shall be used for scale-infested trees. In this work care was taken not to cut down the cost of the operation at the expense of good work. The best appliances and materials were used that could be procured, yet the cost was not such as to debar its use when compared with kerosene, whale oil soap or hydrocyanic acid gas. The total cost of the materials and appliances, including the wear of the tools, amounted to $355.90, and the cost of the time of men and horses was $321.60, making a total cost of application of $677.50. This divided by the number of trees sprayed, or 11,170, gives a cost of 6.06 cents per tree. These trees were all peach or plum

and from three to twelve years old. A large majority of the trees were full grown. This cost would have, undoubtedly, been greater had the work been done in a small orchard.

Results of spraying—Most of the trees sprayed were not badly infested with scale, although nearly all had some scale, and a few were considerably crusted. Within a short time of application, examination of the infested trees showed that the insect under the scale had a shrivelled appearance, and when pressed with the point of a knife or other instrument they were found to be only a shrivelled, dry skin, while those on the unsprayed trees were plump.

May 20th, the trees were examined and more than 95 per cent. of the scales were found to be killed. June 29th, examination of the sprayed trees showed them practically free from young scale, while trees near by that were not sprayed showed from 25 to 200 young scale per square inch. At this time some of the old, live female scales were found on the sprayed trees, but these had not produced young, probably owing to the absence of living adult male scale insects. This would indicate that the female scale is more resistant to spraying solutions than is the male.

Effect on the trees—In some places it has been noticed that trees sprayed early in the spring with sulphur, lime and salt solution were slower in developing leaves and blossoms than trees not sprayed. Observations in this orchard seemed to verify this statement, the growth from some varieties being from a day or two to a week later than on the unsprayed trees of the same variety. This was undoubtedly caused from the white trees absorbing less heat than the unsprayed trees. In no case did any of the trees show any signs of injury from the solution. Some facts noted in connection with the work would indicate that the solution acts as a fungicide as well as an insecticide. Peach leaf curl was quite prevalent this season in many orchards, and while leaf curl was to be found to some extent on Elberta trees near the sprayed orchard, none could be found on any of the sprayed trees of that or other varieties. However, several seasons' experience will be necessary to demonstrate it to a certainty. That it has some effect on the fungous growths on the barks of trees is certain, for trees sprayed one year previous had a much smoother, cleaner bark than the trees which had not been treated.

Conclusions—That the sulphur, lime and salt remedy is practicable in the East as well as in the West can no longer be denied. The only question is one of cost and ease of preparation and handling. As compared with kerosene and whale oil soap, it is not so expensive in the raw state, but is somewhat more difficult to prepare owing to the necessity of boiling. This boiling is better and more economically done by steam, but where only a few trees are to be treated it may be satisfactorily boiled in any large iron kettle.

In application, the sulphur, lime and salt solution is no more difficult to apply than the Bordeaux mixture. Any pump and outfit that will apply the one will be satisfactory for applying the other, while for kerosene a special pump must be used and that with considerable care. With sulphur, lime and salt there is no danger of putting on too much, it stays on for a long time and can be applied in any kind of weather when the trees are not actually wet. Kerosene can be safely applied only in dry, clear weather, for if the oil does not quickly evaporate, death to the tree is almost sure to result.

When to spray—Sulphur, lime and salt may be applied at any time when the leaves are off the trees, that is, from November to April. Fall application is, undoubtedly, the most desirable, because the weather is usually more favorable at that time and the solution has more time to act while the scale and trees are dormant. A very good plan where there is a possibility of eradicating the pest is to make one application in the fall, then repeat the following spring, thus making sure of touching all parts of the trees with the material. A very weak solution of sulphur and lime has been used on trees in foliage, but there is generally no advantage to be gained in attempting to do the work in summer, for while the scales are more easily killed at that time, they are much harder to reach with the spray, more solution is required, and the foliage of most trees will be burned by a solution strong enough to kill the insects.

Some hints about spraying—One month's experience with spraying for San José scale has led us to think that the secret of success lies in thorough work. All the different formulas we used did the work, so we believe that a somewhat weaker solution can be used with good results. The best caustic lime that can be obtained is the cheapest in the end. Air slaked

lime is worthless. Flowers of sulphur should be used, though any finely ground sulphur will do. Salt is not an essential ingredient in the solution, its office being mostly to make the material stick to the trees, therefore the cheapest salt is as good as any, providing it does not contain dirt that will cause the pumps to clog. By adding the sulphur to the lime, then slaking with hot water, the heat from the slaking lime helps to dissolve and mix the sulphur with the lime and shortens the time necessary for boiling. The salt may be added at any time during the boiling process.

What to spray—Trees that have been infested with the scale until they have become crusted, as well as old, neglected trees are not worth spraying. The best remedy for these trees is the ax. All trees should be severely pruned and cut back before spraying, as much labor and material are saved by so doing, and much better work may be done. All loose bark should be scraped from the trees with a hoe, as this bark is of no use to the tree, and may protect the scale from the spraying solution.

In spraying trees in an orchard do not stop with the trees that are known to be infested. If one tree in an orchard has scale, the others are almost sure to have more or less scale also, although often much care is necessary to find them. It is better to spray a few trees which do not have scale, than to take the chances of leaving trees that are infested.

Questions and Discussion.

Prof. Britton: Did it stick as well where you boiled it a long time?

Mr. Bennett: We found no difference. In some cases we sprayed all day and a drenching rain followed; we couldn't see the next day but there was as much stuff as when we put it on. We had to use more lime than sulphur. If we got the best lime and used flowers of sulphur, we could use less lime than sulphur.

Prof. W. J. Greene of Ohio: We have had remarkable results in Ohio. Last year our peach crop was almost ruined by borers. Where the lime and sulphur was used, it completely prevented this: it saved the crop. And as a fungicide it is better than Bordeaux mixture, we think, and as a combined fungicide and insecticide it is almost perfect.

QUESTION: I would like to ask Prof. Britton what sort of lime he used.

PROF. BRITTON: I used some Canaan lime, and some from Lenox, Mass. We like the whitewash or finishing lime. Mortar lime is cheaper, but leaves a sediment that tends to clog the pumps. Some of the Canaan mortar lime that we purchased contained nearly 40 per cent. of magnesia.

QUESTION: I will ask Mr. Hale for his experience in leaving out the salt from the solution. It is supposed to make the solution stick to the branches.

MR. HALE: In our spraying at Glastonbury last year, salt was used in nearly all the spraying,—a portion without salt. That without salt would stay on the tree. In Georgia we sprayed 41,000 trees without any salt in the mixture,—20 lbs. of lime and 50 lbs. of sulphur to 50 gallons of water. The trees were thoroughly sprayed, and the month of December was clear and dry, but after Christmas time and during the early part of January there were heavy and incessant rains, more rain than usual. I have not seen the trees, but my superintendent reports that it is remaining on thoroughly and well, —no appearance of its being washed from the trees. In the matter of cooking, we found that thirty to forty minutes boiling is enough to get a thorough solution. I got the same apparent results in twenty to twenty-five minutes.

I have never made much of a paste with sulphur and water except by the hand. Put two or three gallons of water in the bottom of the barrel, dump in the lime, turn on the steam, turn on the water gradually, have the steam running through it all the time, and you have the heat of the lime and of the steam at the same time. I shall not use any more salt.

DR. E. P. FELT of New York: If I may be accorded a minute, I want to say this: in listening to this discussion on the methods of controlling the San José scale, I have been much struck by the parallel lines along which we have been working in New York State as compared with those in Connecticut. While listening to Professor Britton, I could not help thinking how precisely he expressed my own ideas; his work and mine agree almost entirely. My object in rising is simply to bring in one more line of evidence concerning the effectiveness and value of this lime and sulphur solution—or mixture, rather—and perhaps throw a little light on methods of preparation.

In the first place, in New York State, particularly in the Hudson river valley, we have a number of orchardists who are not engaged in the matter so extensively as many others, and it is not always easy to find a steam engine at hand, and we have been making our mixture in a large kettle, and we have found this a good method. We put in the kettle five to eight or nine gallons of water, dump in the lime and pour the sulphur right in. We have to watch it as it boils up. The man who is there has to stand by and stir it and have a pail of water handy. We have neglected the use of the salt. We boil for only thirty minutes. My attention was called to Mr. Brown's method. I think that his method involved bringing to a boil the entire amount of water in order to slake the lime. While it is possible he can bring about a partial combination between his lime and sulphur, I doubt if it is a method that we can use. That "40–20" is a formula that has been around before, and we were told it was necessary to boil two or three hours. We are obliged there to use small kettles, consequently after we have got six, eight or ten gallons of the mixture boiled about thirty minutes, we take it out, strain it and dilute with water, and make the application at once. We have found it unadvisable to attempt to keep the material over. We had about the same experience as Mr. Bennett; our apparatus was stuck up. In the use of the other material practically the same, a proprietary substance, it was almost an absolute failure compared with recently prepared lime-and-sulphur wash.

I would like to call attention to some New Jersey and Georgia experiments with caustic soda. That material was tried in comparison with lime and sulphur, and the comparison was to the detriment of these caustic sodas.

My attention has been called to another material which may prove of slight value, and that is corrosive sublimate. But that is a very virulent, dangerous poison. I would not advise the experiment, but would state that the thing has been used in combination with Bordeaux mixture in the proportion of about one ounce to fifteen gallons. I doubt very much if it is going to be of any value, but we intend to test it.

I was interested to learn that there was a sodium sulphide which could be obtained in a commercial way. I had been making inquiries. It is certainly well worth trying. And I

PLATE III.

Portable Feed Cooker used in making the lime and sulphur mixture.

want to express my appreciation of the work Professor Britton has been conducting, and I think he is working along the lines of success.

MR. HALE: I would like to ask if any of those here have made an examination since the late extreme freeze, and if they have any idea that the extreme cold has acted as a "spray" on any of those "critters."

DR. FELT: I have not made any examination. It is too cold for me to go out.

A MEMBER: There is a man in Michigan of the name of Thomas Wilde; and if any would like to correspond with him, he has made experiments with corrosive sublimate. He is an acknowledged authority in Michigan to-day.

QUESTION: What is his address?

A MEMBER: Berlin, Michigan.

Costs and Results of the Work.

By J. Norris Barnes, Valesville.

In the statements that I have to make here to-day, in treating the subject assigned to me, "Costs and Results" in spraying for San José scale since we discovered its presence in our orchards some three years ago, it seems desirable to describe at first somewhat the conditions prevailing at the time and before a course of treatment was determined upon.

The peach orchards to which treatment has been given were planted in 1896 and 1897, had always been well treated, had attained large size and were in fine condition, taken as a whole, when a five-year old tree, one of the finest in previous growth and vigor, was discovered fairly encrusted with scale. I may say right here that while that tree was cut away, every surrounding tree, which was more or less infested, is at the present time still in its place and apparently in good condition. The discovery of the presence of scale was a great surprise to us and some little time was used in trying to find out how large the infected section was and in deciding what treatment to give. Finally, a very strong whale oil soap wash was used, put on the larger branches with a brush as a temporary relief measure.

In the meantime, the oil spray, the gas treatment and other remedies were considered, and the lime-sulphur-salt spray selected as the method we would attempt to subdue and hold in check the enemy. A steam boiler, about new, of some four to six horse power capacity, was secured and the necessary piping and fixtures for cooking the contents of 12 casks at once, so arranged that any one or more might receive steam independently of others. Casks holding 100 to 120 gallons were used, fitted with faucets near the bottom for drawing off the cooked liquid. We could learn of no place in this section where we could go for advice and instruction and so, to a certain extent, had, as it were, to feel our way, both as to appliances, arrangement of the cooking plant to do the work economically, and in preparing and applying the spray. Many vexatious delays and perplexing questions as to why so and so, were more or less present with us during this first season's attempt to save our orchards by means of this treatment. Investigation during the preceding year had shown us that greater infestation existed than we at first supposed could be possible, that probably the whole orchard was affected, here and there a tree or more showing the insect present; but with something like 6,000 to 7,000 trees sprayed, we were compelled to stop by the bursting buds. During this time we used a barrel pump mounted on a single horse stone-boat, one man to pump, two men to spray. We had to take men who had no idea of spraying work and teach them how to do the work. 40 lbs. of lime, 30 lbs. sulphur, 15 lbs. salt, 60 gallons water boiled about two hours was our formula for that season's spray mixture, and we aimed to put it on the trees very hot. In spite of more or less faulty preparation, frequent heavy rainstorms and the prevalence of high winds nearly every day, also the necessity of covering all the ground possible, these conditions preventing thorough work being done, the results were to a large degree gratifying.

The general appearance of the trees, even if they had been badly infested, was that of strong vigor, the scale apparently being mostly killed. The cost per tree for the job of spraying was estimated at 10 to 11 cents.

In preparing for the year 1903 spring spraying, having found our boiler of entirely too small capacity for our needs, we hired a Kinney Safe engine of about six horse power capacity and

joined it to our steam pipes, giving us some ten or twelve horse power capacity, and selected a place near water convenient to the orchard, using three barrel pumps on boats, same arrangements as year previous, except one lead of hose in place of two to each outfit. An average output per day for each outfit was 10 casks of 40 gallons or more, or from 12 to 1,500 gallons of spray liquid per day for the three outfits. The largest day's work done was about 40 casks, or 1,600 to 2,000 gallons of spray. Our steam outfit could not more than keep these three outfits going and do our best and cook to properly mingle the material so it would put on right. It required two men constantly at the boilers. One was kept busy most of the time stirring the slaking lime and drawing the liquid from the cooking tanks and straining ready for the pump barrels. The other man took care of the boilers, attended to the weighing out and putting together of the materials, water, etc., and taking general oversight of the plant. When working near by, the spraying outfits came directly to the boiler for their spray, but for points of the orchard more distant, the spray liquid was strained directly into common casks holding 40 to 50 gallons and drawn by wagons directly to the place needed, unloaded on to a movable platform of convenient height, the empties returning to boiler for use again. This plan kept a constant supply of hot liquid spray ready for the convenient use of the outfits.

This season the formula mostly used was 30 lbs. lime, 20 lbs. flowers of sulphur, 15 lbs. of salt, 60 gallons water, cooking 1½ to 2 hours. Various other formulas were tried, also the length of time of cooking was varied, but we seemed to get the best results in putting on in above just described method. About all the trees were gone over the second time when wind was in opposite direction, if possible, to touch every place not reached by the first spraying. It is estimated that we used a total of over 36,000 gallons of spray liquid, which required more than 13,000 lbs. sulphur, 16,000 lbs. lime, and 7,500 lbs. salt, costing about $500.00; cost of labor including horses, $562.00; cost of coal besides wood used, $20.00; cost of sundry expenses, repairs, etc., $25.00; charge for deterioration in value of the plant, $50.00; a total of about $1,157.00, as the cost for spraying about 11,000 trees, or about 10 cents per tree.

Something like one-half the number of trees sprayed were quite severely cut back, for several reasons, one being that it would presumably greatly lessen the cost of the job of spraying; and we found that said cutting back *did greatly* lessen the quantity of material and labor used. The last two or three days spraying damaged many blossom buds as well as the foliage buds. It certainly is not safe to use this spray beyond a certain point of development of the fruit buds. As to results, I do not know where there is a tree in the lot of about 11,000 sprayed that scale can be found on, still I would not dare say that there is no scale there. The bark of the trees in appearance is clean and glossy, all that could be desired.

I am inclined to think the spray may be worth all it costs as a fungicide in giving clean healthy trees and handsome fruit. The few peaches that we had (except from an orchard not sprayed) were nearly free from black spot and mildew and possessed excellent keeping qualities. The fruit from the unsprayed orchard was in marked contrast, badly spotted and mostly low-priced fruit. Some of the cleanest, soundest and most beautiful fruit we had came from a section of the orchard from which two years before we did not market one-quarter of the fruit, on account of rotting in the orchard before we could gather it. On the whole, we are past fearing the San José scale in our peach orchards, for we are confident of our ability to keep it thoroughly in check by a method that appears to be valuable also for its help in giving handsome and good-keeping fruit. So far, it has cost us about $2,000, more or less, to knock out the scale in these orchards, and to learn what we know about how to do it; a large sum, yet when we stop to consider a moment and realize that these orchards, while still young, have with the scale present, produced fruit in quantity, well towards the hundred thousand basket mark in the four full and partial crops produced, and at the present time give abundant reason to expect a full crop the coming season, this statement as a showing of results seems to me much better than to have surrendered to Mr. San José Scale and cut the trees down. Rather, I am proud (please pardon me if I am out of place) if in solving this problem for ourselves we may be of service in helping to down this seeming great menace to Connecticut fruit growing and to the beautiful, ornamental

plantings about our homes, much of which is in danger equally with our orchards.

All of us as members of this Society, as owners of Connecticut orchards and Connecticut homes (and there are none better), have a common interest in any method of treatment that promises to relieve from threatening disaster.

A few more words and I am done. In the midst of a certain section of our peach orchard, we have an apple orchard of thirty to forty years of age, good, vigorous trees. We know that scale to some extent has got onto them; they were treated in the last spring's work and I am inclined to believe that such sized trees present a much harder problem to handle right; and I cannot help finding myself casting about for a plan of apple orcharding that will give us a form of tree more easy to spray, easier to thin and gather the fruit from, and, perhaps, commence to produce fruit at an early age. I believe this form of tree and condition of orchard is bound to come; that the old form of tree and plan of apple orcharding is bound to go in time. The scale and lack of the right spraying apparatus will force this even if other reasons do not. We regard our outfit and spraying apparatus as good for an ordinary spraying job as we know how to make it, yet it is far from what we need for large spraying operations. A much larger capacity for manufacture, with a stationary plant fitted up to economize labor in every way, a cheap, light and easily managed power to drive the pump to spray, is much needed. I doubt if any of the commonly mentioned sources of power are right, that is, are the best. I have not been able to learn of anything in the market that seems to fill the bill perfectly. Some way of using compressed air appears to me, to promise something desirable in this direction.

Of course, it is desirable to be good missionaries among our neighbors, rendering what aid we can in cases of actual orchard infestation and encouraging the removal of all natural growth that by its close proximity might afford a breeding place for scale and be the source of reinfestation of a sprayed plot.

Discussion.

Prof. Greene: About how many days did it take?

Mr. Barnes: About thirty days.

PROF. GREENE: I think Mr. Barnes can save about four or five dollars per day with compressed air. One man can spray as much in that way as two men in the other way. And one man can take an outfit and go out alone. The man who makes the mixture can run the air-compressor. There are three men saved in the work, and the three men at work will do more than six men could do pumping by hand, and do it better, get a higher pressure and more uniform.

MR. HALE: You must have a driver.

PROF. GREENE: The man who does the spraying is the driver. I am speaking from our own experience. We have no trouble in getting a horse that will go right along.

MR. HALE: How do you compress the air?

PROF. GREENE: We use a gas engine, but the steam engine would be better.

MR. BARNES: It has seemed to me that if we could get possession of some power that we could put onto our one-horse outfit, the horse could soon be trained to go along,—a power that would hold until that outfit came back to be refilled, that would not require a first-class mechanic to be fussing over the outfit all the while.

DR. FELT: I know such a power, but it may be just a trifle expensive. Last summer, and again this winter at Geneva and at Rochester, my attention has been attracted by the Niagara gas-sprayer. The unique thing about it is that it depends for its power upon a liquefied carbonic gas, which is superior to compressed air because you have a practically uniform pressure till all the gas in the cylinder is exhausted. You pay $3 a cylinder; and a cylinder, as I remember it, is sufficient to spray about 600 gallons. All you have to have in addition is a tank, a special tank for use in that way. It is just a question of opening or closing a nozzle—no pump to get out of order. It is ideal in some ways.

MR. IVES: Who is familiar with the matter which has come to my mind; that of a storage battery something like Edison's outfit? I don't know whether it is developed or not.

MR. HALE: I have been studying and looking for power for spraying. I have never yet found a power sprayer that convinced me that it was as economical as man power. I believe that power of some kind ought to be cheaper and better than

men, but I have not been able to find it. Compressed air requires a steam pump or gasoline engine of some kind. The Niagara gas-sprayer seems to me the most ideal of any gas-sprayer that has yet come out, but the carbonic acid gas costs practically half-a-cent a gallon. In the South, with the good, long days and level land, we are able to spray a thousand gallons a day. Five dollars a day to run a pump! In using man power, we are four dollars and a half ahead on the game. Here in Connecticut, an eighteen-year-old boy can run the pump. Farm hands ask, as one of the first things, "Have you got a spray pump?" Now, the modern pumps can be worked by a moderately strong boy or girl. But here you get a dollar and a half as against five dollars with the cost of the sprayer on top. It seems to me cheaper. If it makes a finer spray, that offsets the cost of labor.

Mr. Hoyt: The enemy that we have to fight is a formidable one. It has come upon us with power and great force and strength, but I am one of those of great faith. I don't believe that we need to lie awake nights for fear this enemy is going to overcome us. I never have yet seen the problem so great but that the mind of man can overcome it. If it is a fact that we who have the control of material things here upon this earth cannot overcome this enemy, I am sorry for us. I believe something will come up by which we can kill this enemy; and fighting this enemy will be a means of our producing more and better fruit than we have done in the past.

After devoting nearly the entire morning session to the scale problem, the discussions were here drawn to a close, and President Gulley called upon Mr. Edwin Hoyt to present his paper on Coöperation, which was carried over from the previous day's session.

Coöperation and Cost of Production as Factors in Meeting Competition in Fruit Growing.

By Edwin Hoyt, New Canaan.

In the advance program sent out a few days ago, I saw the above subject announced with my name under it. The next day I received a letter from our Secretary asking of

me one favor, viz: to have a short paper on the subject named. I wrote him that I would *try* to grant this favor. It will surely be only to *try* to do it, for I have no data or facts to present to you gathered from coöperative orchardry. That there is urgent necessity, not only to cheapen the cost of production, but to improve the quality of fruit here in Connecticut, to meet the growing and ever reaching competition, there cannot be a doubt, but how to do this is the vital question for our consideration. My theory is coöperation or combination. When we see and read of so many gigantic corporations, as well as smaller combinations, so successfully running their various businesses against all competition, it is well for us to ask if these same business principles or methods may not be applied to the business of the farmer and fruit grower.

In looking over the *Farm and Home* paper a few days ago, my eyes caught the following: John D. Rockefeller, Jr. says, "To fight the battle alone is to be lost. Association with others is an absolute necessity, if we would be successful. We can see this illustrated every day in our business world." The editor remarked, "Reference to the business world at present does not include the farmer. Everybody knows that they are not doing business on thorough business principles, but is it not time that they got into the business world?" What is good for one class of people who produce, manufacture and sell, ought to be good for others. If in union there is strength and success for Rockefeller and his associates, why would it not mean strength and success for the farmer?" There can be no doubt about this reasoning, provided the union is perfectly formed and managed, so that the union is as one man, which pulls, works, acts and sticks together. Now, I cannot tell you how much cheaper or more profitable fruit can be raised by coöperation to meet the present competition, than it is now raised. To my mind, however, it is perfectly clear that fruit can not only be produced at less cost, but of finer, more attractive and salable appearance, and sold at better prices by combination than that which is now grown and sold by most of the farmers throughout Connecticut. It is, no doubt, evident to you all, that large operations, when systematically managed, must tend to lessen the cost of production more or less. As an example, let me briefly state what expert work

I saw in Chicago at Armour's slaughter-house. Stalls were arranged about five feet wide, to hold one steer, and about thirty of these stalls were in line beside one of the places of slaughter. One man who walked the plank at the top of these pens did nothing but shoot a bullet into the brain of the animal. As soon as the animal was shot, the door was opened, a rope placed over its head, and by power the animal was drawn into its place for slaughter. The man with the rope did nothing but draw in the animals to their places. One man followed who did nothing but cut their throats; he was followed by another who did a certain but small part of the skinning, to be followed by another and another, until each had completed his alloted part in dressing the animal. By the time the last one in the line was drawn in, the place of starting was ready for a repetition of the same work. So each man passed down the whole line and did his alloted work, and returned to the place of starting to go over the same routine work. Now each man had only a certain part of the work to do in dressing the animal, but in that part he had become an expert, a specialist. It seemed to me that a dressed carcass was moving away every minute or less. This was coöperative work, trained experts, perfection, system, cost per animal to slaughter reduced to lowest minimum. No mistakes, no clashing of work, but simple, well directed and well executed business methods.

To do work well, rapidly and at the least possible cost, men must not only be thoroughly trained in the work to be done, but the most approved machinery and implements provided. Now a farmer who has an orchard of 50 or 100 or 500 fruit trees cannot readily procure and hold trained and expert workmen to care for his small orchard. He has either to do it all himself, or hire such inexperienced help as comes along, to assist him. In most cases, the cultivating, trimming and spraying is not done at all, for lack of capital, knowledge, or experienced help. Now, suppose a combination was formed of 50 or 100 farmers, with 50,000 or 100,000 trees or more. Intelligent men could be employed and trained, each to have his part to do, and become expert in that particular line of work set for him to do. The man whose business it is to buy for the company could buy everything wanted in the way of tools, teams, fertilizers, spraying machines and materials for spraying, barrels, lum-

ber for boxes, etc., etc. He would soon learn where best to buy and buy at the lowest jobbers' prices. He would soon, if a bright man, become an expert in that line of work, and know whether he was buying a good article and at the lowest rates.

The spraying, so necessary to be done now for perfect fruit, cannot be trusted to inexperienced men every year. This work should be done by intelligent men who can run machinery and apply the spray to the trees with judgment, and with as little waste as possible, yet with thoroughness. One man to mix the material to be sprayed; the men who spray and the teams must not be stopped to do the mixing. Each has his work to do while it lasts, and it must be done in time well and no mistakes made. Experience will soon attain greater perfection and speed in the work.

The cultivating and trimming of the trees, thinning and picking the fruit, sorting, packing,—each branch to be in charge of men trained and expert in each of the kinds of work intrusted to him. When this coöperative work has been run a few years, men will become educated to, and experts in their kind of work, which cannot be so thoroughly taught only by practice in large operations.

It must be evident to you that the per cent. of cost will be very much lessened by this coöperative management. This is not all: fruit grown by these large combinations would not only be grown more perfectly, but would be in quantities large enough to employ an expert salesman to look up the best market, and sell all the fruit and at better prices than the farmer can with his small stock of fruit. Buyers prefer to buy and will buy where large stocks of goods are for sale.

The cold storage plant, now so necessary for holding fruit, for the single grower (unless a very large one) is out of the question, while coöperatively the cold storage would be perfectly feasible and comparatively of small cost for amount stored. As a modern business scheme, coöperative orcharding I believe to be practicable and it can be made profitable to those who join the corporation. "Oh! you cannot make farmers hold together, you cannot make such a scheme work," some will say. "These farmers will not stick. Too selfish; will not hang together." Do you believe it? Well, if this is so, let them go. There

are those who will coöperate and hang together. It will not be necessary to have all farmers, or any farmers in fact, to form an orchard company. With brains, capital, faith and energy, success is very closely allied. We older farmers, many of us at least, are creatures of habit, and it is quite hard to get and keep us out of the old ruts we have so long been in. But we older ones with our fixed ideas and ways are not to be here long to block the wheels of modern business progress. Educated young men are coming forward every day. Our places are soon to be filled by others younger and more progressive than many of us are. There is no fear about coöperative companies made from such material as may be had now, not holding together and being successful.

Millions of dollars are lying almost idle, waiting for paying investments. For investments not to-day worth 100 cents on the dollar and to-morrow shrunk away to 50 cents and next day to 25 cents. There can be no such shrinkage in money invested in Connecticut farm lands. They are through with their shrinking and are beginning now to come up again in value. Some capitalists have already bought up large farms and others are seeking like investments.

Now I am not a promoter of corporations, but there are men who are trained to this work. Let a company of fruit growers organize and look for a promoter to organize the company if needed, and one will soon be found who can arrange all details and start the company right, and besides find plenty of capitalists who would be very glad to join a company of this character.

I do not know how long it will be before coöperative orcharding will be carried into operation, but I do believe the time is not far distant when such a movement will be inaugurated. The beginning may not be large, but with time and experience, I believe its growth would be healthy and rapid. With our good roads, automobiles, rural free delivery and telephones, the orchards or farms of a large corporation could be easily and quickly reached, or communicated with, and the advice or presence of the president or manager of the company could quickly be had at any point it is wanted. With experience, system and an expert man, his especial part to look after, a very large business in fruit growing or general farming may be carried on with but little if any more care to the president

or general manager of the company, than is required of any single large farmer, while the per cent. of profits from the capital employed would be greatly increased. The subject is a large one, as well as an important one, to us all. I wish I could have handled it better in the ten minutes alloted me. I trust I have said enough, however, to cause you to think about it and discuss it.

President Gulley: I suppose it is safe to say that not half of this audience have ever visited the Connecticut Agricultural College. You have not the least idea what we do or how we do it, and you don't know what we are trying to do. The only way, if you won't go there, is to bring it over here. I do a little horticultural work, and I have brought my "kindergarten class,"—that is, the class that began this last fall. They had never been in the institution until last August or September; they are beginners in the art. I may say, too, they have not yet gone into pomological work, as they only began on the subject about ten days ago. What they have been doing is in vegetable and floricultural work; their demonstrations will be along that line.

We are not going to give you any new information, yet not one of you at their age would have known anything about it; these boys are getting a very early start. I have brought up half a dozen of them to say a few words to you on some topics they have had something to do with.

Short papers with a demonstration of each subject were then given by the following students:

Clark H. Welton, Waterville. "Three Parasites of House Plants."

Roy C. Gulley, Storrs, "Protection by Water and Elevation."

William W. Oflweiler, Bethel, "Propagation by Hardwood Cuttings."

Paul W. Graff, Bridgeport, "Propagation by Soft Wood Cuttings."

W. Robert Nash, New Britain, "Seed Germination."

Sherman P. Hollister, Washington, "Points of a Good Seed Drill."

Mr. Hale: I think we ought to pass a special vote of thanks to these young men for coming here. We who have been employed in this business for the past thirty years can but feel a deep interest in the instruction of bright young men to become Connecticut farmers who are going to follow in our footsteps. We also thank our president for his thoughtfulness in bringing them here. I believe this feature is one of the most interesting on our program, showing the way in which their work has been carried on. We want to know that our young men are being educated in the State of Connecticut to take up this most important feature of fruit-growing in this State. Others have shown it can be done with profit.

Mr. A. C. Sternberg followed in an earnest speech of appreciation of the work of the Agricultural College.

A resolution of thanks was unanimously passed.

The following resolution was then introduced by Mr. Hale:

Resolved, That a finance committee of three be appointed by the President and Vice President, who shall as soon as practicable, after each annual meeting, make an estimate of the receipts of the Society for the coming year, and from these estimated receipts make such appropriations for the various departments of the Society's work as in their judgment may seem best, provided, however, that the total appropriations shall not exceed 85 per cent. of the Society's estimated income.

Mr. Hale: We have our annual meeting, which is one of our largest expenses; we have our institute work throughout the State; we have the expenses of our Secretary's office, etc. But it seems to me now, instead of going on in no systematic way, the appointment of a finance committee should be made and our business brought in under regulations. Therefore I offer this resolution.

Secretary Miles: I heartily approve of the appointment of this finance committee. Few of you have an idea of the growth of the Society and its work, and the increasing necessary expenditures; if you have some of the responsibility placed upon a finance committee, it will systematize the work so that at the end of the year you will have the record brought out in better shape.

Mr. Britton: I would like to inquire whether it is intended that this committee shall be a regular standing committee of the Society. It might be well to look at the constitution to see whether we need to make any change in that in order to elect this committee.

Mr. Platt: I understand the duties were to apportion 85 per cent. of the funds. Would that committee also approve bills?

Secretary Miles: At present they go through the Secretary's and President's hands.

Mr. Hale: My resolution simply limits the expenditure of money to the various departments, as is done in our town and city offices and in many associations,—gets the Society onto a business basis.

Secretary Miles: Mr. Britton brought up the matter of whether this conflicts with our by-laws. It might be brought in as an amendment; adding to our list of standing committees.

Mr. Platt: I will bring it in in that way. I spoke of making the duties of the finance committee cover the auditing and approving of the bills. If Mr. Hale accepts, we will put it all under one motion.

Mr. Hale accepted the amendment and the resolution as amended was adopted as follows:

Resolved, That a finance committee of three be appointed by the President and Vice President, who shall as soon as practicable, after each annual meeting, make an estimate of the receipts of the Society for the coming year and from these estimated receipts make such appropriations for the various departments of the Society's work as in their judgment may seem best, provided, however, that the total appropriations shall not exceed 85 per cent. of the Society's estimated income.

The duties of the Finance Committee shall also be to approve all bills of the Society before they are paid by the Treasurer.

The noon hour having arrived, President Gulley declared a recess until 1.30 P. M.

Afternoon Session.

The Society was called to order at 1.45 for the closing session of the meeting.

PRESIDENT GULLEY: The first order of business on our program for this afternoon is the election of officers.

Is the Committee on Nominations ready to report?

MR. EDDY: *Mr. President and Members of the Society*—Your Nominating Committee beg leave to report the following list of persons and to recommend them as officers of this Society for the coming year:

For *President*—Prof. Alfred G. Gulley of Storrs.
Vice President—Josiah M. Hubbard of Middletown.
Secretary—Henry C. C. Miles of Milford.
Treasurer—Roswell A. Moore of Kensington.

County Vice Presidents:
Hartford—Geo. H. Hale of South Glastonbury.
New Haven—Albert B. Plant of Branford.
Fairfield—Wm. E. Waller of Bridgeport.
Litchfield—J. H. Putnam of Litchfield.
Middlesex—Roscoe H. Gardner of Cromwell.
New London—S. P. Sterling of Lyme.
Windham—L. O. Haskins of Scotland.
Tolland—C. H. Baker of Andover.

Respectfully submitted,
J. C. EDDY,
NORMAN S. PLATT,
L. C. ROOT,
HARVEY JEWELL,
H. B. BUELL,
Committee on Nominations.

On motion of Mr. Fenn, it was then voted

That the report of the Committee be accepted and the Secretary be authorized to cast the ballot of the Society for the list of officers as recommended.

The Secretary proceeded to cast the ballot, whereupon the above mentioned list of officers was declared duly elected for the ensuing year.

Mr. N. S. Platt offered the following resolution:

Resolved, That the publishing of the Annual Report of the Society be left in the hands of the Executive Committee and that they be empowered to employ special assistance if necessary, and that the sum of $50 be appropriated for the purpose of editing the same, provided that the report shall be ready for distribution in April.

Perhaps I should say a word on this resolution. It is offered for two reasons. One is that the business of editing and publishing the report has properly been the work of the Secretary. The Secretary receives the sum of $100 for his services; and for all the work that is done by the Secretary, including the editing of this report. I think it is rather a small amount. The other is that the issuing of this report has been delayed later that the date named in this motion—and it seems to me later than it ought to be.

The institute work goes on in the winter and takes up considerable of the Secretary's time; and this plan is suggested with the hope of aiding the publication of the report and getting it out in time. It is presented for your discussion.

The resolution, after a brief debate, was put to vote, and adopted.

President Gulley: I am sorry to say that one of our speakers for this afternoon, Mr. Skillman, has failed to put in an appearance, so that the first speaker will be Mr. R. H. Race of North Egremont, Mass., who will talk to us on the subject of "Commercial Small Fruit Culture," with special reference to the strawberry.

I now have the pleasure of calling upon Mr. Race to take the platform.

How I Grow Strawberries for Profit.

By R. H. Race, North Egremont, Mass.

Little did I ever expect to stand before you, to give my views and experiences in the culture of strawberries. It has been my privilege from time to time to read the writings of your very successful fruit growers in the *Homestead* and *Rural New*

Yorker, and to profit by them and criticise them, but to stand before you and give my experiences never entered my head, and to say that I esteem it an honor, is putting it mildly. I hope, my brother fruit growers, that I may be able to treat the subject so well that you may not be dissappointed, but be profited. When I received your Secretary's invitation to come and address you, I said, "Oh, my! every one of those fellows down there can teach me,—I am nothing but a little fellow in the berry business," but the invitation was so kindly given, and along with it a very interesting letter from my friend Sharp, saying, "My brother, you cannot afford to miss the chance to get acquainted with the brightest lot of fruit growers you ever met." I made up my mind that I would try it; if I make mistakes and get criticised, well I will surely come out ahead, for criticism makes men grow.

Strawberry growing, commercially speaking, is no funny job, or boy's play, although industrious boys would succeed most certainly. You all know that, for you have the success of the push-cart fellow right here before you. Preparing the ground is the first and by no means the least essential thing to getting good results. Any land that will grow corn or potatoes will grow good strawberries, and the same treatment that corn needs is what strawberries need. As to growing the plants, I have tried several different ways of preparing a bed, all with success, but will give the one that I now have, which is the most promising bed that I ever had. I plowed the land, two acres, which was a clover and timothy sod, mostly clover, early in the fall of 1901. In the spring of 1902 I planted potatoes, and was very careful to keep them well cultivated. I used Stockbridge potato manure plentifully on my potatoes. Potatoes, before a crop of strawberries, where a heavy sod is taken, are the best to mellow the ground, of any cultivated crop that I have ever tried. The only drawback that I find is that June-bugs are more apt to lay their eggs in a potato field than in any other field of cultivated crops except strawberries. They seem to prefer strawberries to anything. Sometimes I think that they know that I am going to set strawberries after the potatoes, and pitch in and fill the field with eggs. They have given me, at different times, a great amount of trouble, and they seem to be increasing, which gives me some

uneasiness, as I have known them to drive growers out of the business. I was very careful not to let any weed go to seed, as weeds in my strawberry bed are the bane of my life. I dug my potatoes early and went over the ground with a spring tooth harrow, then left it to let the weeds start; they started all right, then the last of October I plowed the ground and did not put on any cover crop, as it was too late. Usually I sow rye as a cover crop, but this time it was no use as it was too late. Early in the spring of 1903 I plowed the ground again, and put on 1,500 lbs. of Stockbridge strawberry manure, using an eleven-tooth seed drill, and going over the ground both ways, setting the fertilizer attachment to sow to its full capacity, which is between 350 and 400 lbs. to the acre; going both ways gave me between seven and eight hundred pounds to the acre. The drill teeth are set about eight inches apart, so that in setting plants it is almost impossible to set one without getting the fertilizer, and as the drill puts the phosphate about two inches under ground, it makes the method a very complete and to me a very satisfactory one. Then I put on an iron band roller and made the surface as smooth as a house floor. It also serves to keep the moisture, and also to start the weeds several days quicker. I am very careful not to roll the land when wet. I like to have the dust rise behind the roller, but just before a rain.

Then I take twine and string across my bed four feet apart, and set my plants from fifteen to eighteen inches in the row, setting from four to six rows of non-fertilizing varieties and two rows of perfect flowering kinds, as I find that pistulate varieties bear heavier crops than the perfect flowering kinds. I do not raise a great number of varieties. Four or five of the old reliable market varieties I have found most profitable. I do change varieties, and like very much to keep up with the times, but am satisfied to let the other fellow do the experimenting. From three to five dollars per thousand for something that has been thoroughly tried and found reliable is enough for me to pay for plants for profit.

I set usually the first week in May, and it takes a week to dig and set the plants, which is plenty long enough to leave the weeds, so that I start the cultivator just as soon as I get through setting, and keep it going, as the weeds show them-

selves, all summer. I think that there is no danger of over-cultivation. I narrow up the cultivator as the runners spread and try to leave the plants in uniform matted rows, two or two and one-half feet wide. Right here let me say that I long ago gave up trying to carry over an old bed, as I would rather set new every spring, and care for the new bed, than clean out an old one. I used to try setting in the fall, but it only gave me extra work in weeding with a greater per cent. of winter-killed plants that had to be re-set in the spring, and worst of all, an inferior quality of fruit, because plants did not get strong enough to carry out their fruit, so abandoned fall setting altogether.

Perhaps I ought to give my method of setting plants; I do not trim the roots; although I like the plan, time is worth too much. I use, in setting, a hoe. Buy a new hoe, as good a one as I can find, cut the handles off, fifteen or eighteen inches long, then cut one side of the hoe off to a point, the right side for a right-hand man, and the left side for a left-hand man, and I find this tool very valuable in weeding, so much so that most of my men choose it in preference to any other. Taking this hoe and striking it into the ground its full depth and drawing it toward me, enough to give room for the roots of the plant to be set behind it, so that the roots will be straight down in the ground, then place the plant in and withdraw the hoe, and taking both hands press the plant in firmly, the harder the better, unless the ground is very wet. In setting in this way I avoid the hot dry dirt that is on the surface, coming in contact with the roots, which in a dry time is very much to be avoided.

When it is very dry and hot I brush away the dry, hot dirt before striking in my hoe. I have always been very successful setting plants when I set them myself. I seldom lose any; not more than two or three to the thousand. I have had a great many, at different times, ask me how I set my strawberry plants and have them live, when *they* could not. I always gave them the recipe, which was about the same as they did, yet they failed and I succeeded. It always brought to my mind a little incident in my early married life, when my wife and myself were invited to tea at the home of an old neighbor. The old lady was a splendid cook, and on the table were some

delicious sugar cookies, of which I am very fond, and which at the time my wife was very much puzzled to make. So she asked our kind hostess how she made such splendid cookies, and she told her formula. "Why," my wife says, "that is just like my receipt, why cannot I make them like yours?" The old lady hesitated a moment, and then holding up her hands, those lovely old wrinkled hands, said, "Belle, if you had those two hands, you could make cookies as good as I." So I say to those who fail in setting plants, "If you had my two hands, which includes all that is behind them, there would be no trouble making plants live."

I aim to finish weeding the first week in September, as then the young plants need to have their own way and not be disturbed. I go over them carefully the last time, and if any plants are uprooted, throw a little dirt on them and they go on all right. This last weeding seems to do them the most good of all, and when I get through I often think of what our friend Hale says, "that weeds are a blessing." But, mind you, it is after I get through, and my back stops aching, because it isn't pleasant to think of my friends when my back aches from being punished by pulling weeds.

I never have put on any fertilizer in the fall, although it may be well to do so. I mulch carefully with oat straw, and am satisfied that it should be put on before the ground freezes. I have always been led to think that I must wait until the ground freezes before putting on the mulch, but that is a mistake, emphatically. I have seen as much damage done in November by freezing and thawing, as in March. The plants are, many of them, weak in November and if the mulch is put on before they freeze, it gives them a chance to grow strong, as putting on the mulch stops the outside or top growth and keeps the ground warm, which produces a bottom heat earlier, and thus increases the root growth, and gives them a longer time than they would have had if they were left uncovered, and the gain at that time of the year will go a long ways toward a better quality of fruit in the spring. I am so much in favor of early mulching that I am cheerfully ready to do the extra labor and stand the extra expense of putting on the mulch. I never remove the mulch in the spring until forced to by the plant growth, which is about May 10th. Then I rake

between the rows so as to retain the moisture and give a place to walk in, in picking the fruit. Leaving the mulch late insures against late frosts and brings my fruit into market a week after the rush, when I obtain a much better price, as strawberries, like peaches, are always in demand.

Consumers seem never to tire of them, and the last ones very often bring better prices than the first, although of inferior quality. After removing the mulch I give a liberal dressing of unleached ashes. I have never seen anything that was better than ashes, and the more I put on the better the berries. For strawberries, ashes seem to be complete. Other fertilizers may do as well for others who may be differently situated; it certainly is difficult to lay down a rule that will cover all conditions of climate and soil. What would be best for one might work ruin for another. One must study carefully his own soil and climate conditions and work out his own berry problems. My simple little story relates only to my practical experience, as I never studied any books on the subject, although much is written. Yet, not all that is written, if followed, would give good success.

I do not pick my fruit until ripe, as I have found that if anything should hinder picking when ripe, so some of the fruit was over-ripe, that my customers are better satisfied with it than green or under-ripe fruit. I do not depend entirely on fruit-growing for bread and butter; if I did in a season like last season, my bank account would be minus.

Now comes the hardest part of the subject—marketing the fruit. If we fail in this, as many do, then the labor and care and anxiety are all lost. No doubt this has discouraged many an otherwise successful grower. In the first place, we must make our fruit first class, put it up in an attractive form, have as good fruit in the bottom of the basket as on the top every time, put our name on the package, and when consumers find they can depend on fruit with our name on it, there will be no trouble to sell for good prices. I think that more depends upon the honesty of putting up the fruit than any other one thing. I have sold in many different ways, by retail to consumers direct, by the crate to retailers, and by wholesale at bed or express office, and find that where I can get a good man or party, the wholesale is the best way for me, as my time

at that time of the year is so much taken that I cannot superintend it all, and to put a man in my place that would be able to fill the place without great loss would be almost an impossibility.

I find too, that all the best consumers have their groceryman who supplies them every day, and all the best grocerymen are depending upon the wholesaler or commission man, and to put one's fruit in against these organized business methods is a pretty difficult and costly matter. What we need is a fruit grower's organization in these days, when everybody is organized against the farmer and fruit grower. The trust is against us, to buy our products and then raise the price, making the consumer pay exorbitant prices, and we get no benefit, making millionaires of a few at the expense of the unprotected and helpless many. Also, the labor unions are against us. How can the farmer or fruit grower get along without his twelve-hour day? I say he cannot and have success. And how can we keep the intelligent boys on the farm at work twelve hours when he sees the other fellow off at five o'clock, and loitering around in his good clothes and cigar. These are conditions that are facing us, that we are having to meet, and that are robbing us of our success. Both of these organizations are hostile to the tiller of the soil, as one can readily see. Now, the question is, and it is a broad, wide-open one too, how are we going to meet them and win? It looks to me as if they would both have to go by the farmer coming to the front, where he belongs, and managing the matter himself. I speak of this in connection with the subject of fruit growing, as it seems to me that it properly belongs to it.

I do not grow strawberries simply to get bread and butter, or to have a bank account. I grow them to get the means to help make a man of myself, and coming here and standing before you, and telling you my simple, home-like story of my way, and looking into your bright, happy faces, will go a great ways to help me make a man of myself, which I could not do were it not for the strawberry business.

Now, in treating this subject, I have one thing that I think should come in. The fruit grower has to treat with nature and natural things. Now nature is God; and one to have success must have fellowship with God. This brings us into an open field of glorious things, that when we love God with

all our being, we will love our brother as ourselves; that brings us into fellowship with each other, and that fellowship lifts us up into a broader and better way of living, makes life more worth living, and strews life's pathway with flowers, and makes our pilgrim's journey useful and glorious. For, my brothers,

> "Our hopes, our aims, our joys are one,
> Our comforts and our cares."

Mr. Race's very bright and practical address was received with great interest, and at its close the speaker was asked numerous questions.

Discussion.

Mr. Race: I am not a "professor." I am a simple berry-grower. Don't tax me beyond my capacity. I will do my best always.

A Member: What varieties do you grow?

Mr. Race: Well, I am only growing this year four different kinds. My main reliance is Mammoth Beauty. We might call it Mammoth Haverland. It was originated somewhere in the central part of New York State and never was taken up by the nurserymen under the name of Mammoth Beauty. It is a beautiful berry and carries out to the last berry. Every one, if the season is right and it is carefully grown, will get ripe. It is an immense producer.

I use, as a "fertilizer," Senator Dunlap and Brandywine. I also have quite a large quantity of Sample. I am not very remarkably impressed with Sample, because I found last year too many false berries. The season was not very favorable for determining quality. I have discarded the Bubach and the Greenville, which is a seedling of the Bubach, because they don't give me fruit enough. The last ripening berries lose their color and seem to lose their flavor with it.

A Member: Do you try any new varieties to give new tests?

Mr. Race: I said I am willing to let the other fellow do that.

President Gulley: Are there any new ones of great promise?

Mr. Race: I will say that Mr. Hale says there are, and also Mr. Allen of Maryland and others; but my experience is that

nine out of every ten new strawberries are failures commercially speaking.

MR. COMSTOCK: How many years have you fruited Mammoth Beauty?

MR. RACE: I think ten years. It is a strawberry that will stand resetting on the same quality of soil, the best of any I have had. You know that where you grow your own plants without changing them they are liable to run out, like rye or corn—you must change once in a while. In some cases this is so, but with the Mammoth Beauty I find that they bear setting over and over again from one piece to another, and are strong and vigorous.

A MEMBER: I think you said you use a week to set two acres. How many men do you employ?

MR. RACE: Well, men are scarce up our way, and I have always had the pleasure of doing a lot of my own work. I have two good hired men right along. I aim to hire two more in the busy season—that is, men or boys. Then I have two rousing good girls that drop strawberry plants when I want them to do it. I don't suppose it is fashionable for women to do it, but they do it and are not any worse for it, and their pocketbooks are not any worse for it either. So that would make about six or seven of us all told.

MR. FLIGHT: How many quarts do you grow to the acre?

MR. RACE: Well, I am not much of a figurer, and I don't keep track of it as some of my neighbors do; I have made a mistake in not doing that. I had an acre and a half that I told the fruit growers down at Worcester last spring about, that I raised on a field where I plowed under some corn. I tried the green-fertilizer method. I plowed under corn eight feet high, which was sown broadcast, using clover after the corn, and rye after the clover. The berry that I used as a pollenizer was Lovett's Early. It didn't prove to be a good bearer. The first few berries were fine, but the rest were little berries, and dealers, of course, didn't like to take them, so a good many of those berries went to waste. But on that acre and a half I picked 316 bushels of strawberries. If the Lovetts had been Mammoth Beauties, I would have had 500 bushels. That is the best crop I ever raised and gathered. They sold for good prices.

A MEMBER: Do you set the plants in rows, and how far apart?

MR. RACE: If I were going to set Bubachs, I would set them 4 feet apart one way and about 12 inches the other; Mammoth Beauties, 15 to 18; Brandywine, 20 to 24. Those kinds that produce a great many plants ought to be set far apart. I aim to have a row about two and a half feet wide, a matted row. That width leaves about a foot to walk in. The Mammoth Beauties will sometimes come so close together that pickers that are anxious to get the most quarts will step on a good many of the green berries.

A MEMBER: What size crates do you use, and where do you get them?

MR. RACE: I buy of my groceryman when he has the face to ask me to buy. Sometimes he gives them to me; in fact, he has had so many of mine that he owes me.

MR. FLIGHT: You say you raised about ten thousand quarts on an acre and a half. Does the Mammoth Beauty do better than the Wilson and those old sorts? We think down our way four to five thousand quarts is quite a yield. I have read in the papers of where they got six hundred bushels off an acre; but two hundred is an awful big crop.

ANOTHER MEMBER: I was a little surprised that you put the yield so high. I consider four to five thousand quarts to the acre is a good yield.

MR. RACE: Well, sir, some men will lie about their berry crop. You don't raise one acre at a time. When you keep a dozen cows, they don't do quite as well as when you keep only one and she gets all the care and feed—do you?

A MEMBER: Have you any plants to sell—of Mammoth Beauty?

MR. RACE: I don't aim to sell plants, although if a friend wants a few I don't refuse. I don't raise plants to sell.

A MEMBER: What do you recommend for mulching plants?

MR. RACE: You can use hay. If you sow corn thick enough, it would not be too coarse. Let it grow not too high; don't put it on too thick. Oat straw is just the thing.

A MEMBER: How do you set the plants?

MR. RACE: My land is not very heavy, nor is it light, but we have stones. That is why I don't use Allen's tools for

setting plants. He has a sandy loam, and can use tools to set plants with. There they can't get a stone to throw at a squirrel, but up here in New England we have stones; and you take a plant-setting machine where there is a stone, and it is not successful. This simple hoe is successful.

A MEMBER: How about the hay from salt marshes?

MR. RACE: Just the thing—only don't put it on too thick.

MR. HALE: Why would you *want* to throw a stone at a squirrel?

MR. RACE: Because I have seen him get into a robin's nest and eat them right up alive. (Applause.)

A MEMBER: Does the robin eat the strawberries?

MR. RACE: No sir, but they get into my early cherry tree, and I sometimes *think* "darn" towards them then, but Massachusetts laws won't let me shoot them. Down south those fellows don't care which—they shoot them. They never get into my strawberry bed. That old fellow that we call "crow" is the worst fellow in a strawberry bed. I think just as much of him as I do of the squirrel. My sympathies are in favor of the robin and against the squirrel. If I was a law-maker, I would get rid of all the crows and squirrels and blue-jays. I would foster the robins because they eat the grub that eats my strawberry roots.

PRESIDENT GULLEY: Mr. Race intimated that his men are boys. Do I understand that you expect to make boys work twelve hours a day at any kind of work?

MR. RACE: No, sir. Yes, sir. I don't mean to be hard. I mean to be a good sort of a fellow, but I have seen a good many days when I had to put in more than twelve hours a day in order to save the crops, but before the week is over there comes a play day and they get it. I never had a man grumble when I asked him to work a little more or less to save a load of hay, because he knows he would get a stick of candy or a cigar, or a day off, to pay for it.

A MEMBER: Did you ever have any trouble with strikers?

MR. RACE: No, sir. I had a little fellow come into my strawberry bed one time—I didn't want him when he came. He picked a half-a-day or more, and then I found him running round among the other pickers. (I have to employ my neighbors and their wives and children.) This little fellow, it seems,

was telling them they could get more pay somewhere else. "Now," he says, "you strike for bigger wages, and you'll get it." So one of the women, she says, "They're paying more somewhere else than you are paying. Guess we won't come on to-morrow." "All right!" I said, "I am ready to pay you." I collared that little fellow. I said: "What have you been doing? You've been talking with that mouth of yours! You've been telling these folks something about getting more for picking somewhere else than here. You take your bundle! and go home! Get right out of here! I am paying all I can afford." (Some of the pickers were making $2.50 to $3.00 a day, and I said, "That's enough; that 's good pay.") And I didn't hear anything more about it. I give a cent-and-a-half a quart from beginning to end of the season. At the last end, if the berries are getting scarce, and are worth picking, I will pay by the day or hire by the hour, simply to get the gleanings. I have thought sometimes I would have trouble, but somehow the pickers come into the field like robins. The farmers and their wives and children will come if they say they will.

A MEMBER: Do you pick more than one crop from your beds?

MR. RACE: No, sir. Something was said in the fore part of this meeting yesterday, in one of the reports here, about the crop of strawberries last fall, and I have been thinking about that matter. I heard about it. I didn't see anything of it—got as fine a bed as I ever set out. It must be that it was on the old beds that they are trying to carry over, that must have got an early growth, too early a growth. You know a strawberry never bears but once and then dies. The twig on your apple tree never bears but once; a new one comes out—a new bud. Now, these fellows had made their growth too early, and the late fall moisture started them into bearing. They will never bear again—that is laid down in the system of plant life.

PRESIDENT GULLEY: Don't you attribute that to the fact that the dry weather in May kept them from carrying out their fruit in June?

MR. RACE: I had no experience in the matter.

A MEMBER: On the old beds that bore pretty well in June at the beginning of June—from the 3d of October to the 7th of November I marketed berries.

MR. RACE: It was so late that those plants can't renew themselves. They will die—you can set that down as a fact. Take an old plant that has raised one crop, and right round that plant come a number of runners, and they put out roots outside. They are weaker, the old plant has exhausted a good deal of the fertilizer; unless they get strong, you won't have any fruit. If they bear in September, it stands to reason that they can't produce any more plants, and they won't bear again.

PRESIDENT GULLEY: We will now listen to an address on another phase of the small fruit question—Raspberries and Blackberries—by Mr. J. T. Molumphy, one of our own growers.

Field Culture of Raspberries and Blackberries.

By J. T. Molumphy, Berlin.

I would select land fit to produce a good crop of corn or potatoes, and after ploughing and harrowing thoroughly, mark out with a common marker rows 3½ feet apart, then set the plants 2½ feet apart in every second row, utilizing the space between the berry rows for potatoes, corn, or any general hoed crop the first year. Fertilize soon after setting the plants by distributing 800 lbs. or so of a good complete fertilizer to the acre along both sides of each row where it will be well mixed and worked into the soil when the plants are cultivated. The second year at least a ton to the acre should be applied in the same way, and this should be repeated annually as long as the field continues in profitable bearing. It rarely pays to continue a block of black caps for more than three or four crops, as either anthracnose, crown gall, or orange rust, and frequently all three diseases, are likely to get a foothold after that and will spread with great rapidity. Immediately after picking the last crop the bushes should be cut and burned and the land plowed and utilized for the growing of anything desired that can be put in at that time of the year, July 20 to 25 usually.

Cultivation is nearly all done by horse power, and consists of frequently stirring the soil up till picking time, using a one-horse plow early in the spring and an iron frame cultivator of the Planet Junior type afterwards.

Have usually pinched back the new canes about two feet from the ground so as to force plenty of lateral branches, then before growth commences in the spring cut back the laterals to 10 to 12 inches; this treatment (the shortening of the main shoots to 24 inches and the laterals to 10 or 12) renders the plant able to support a crop without the aid of a trellis. The next pruning is to remove, preferably right after the season's crop has been harvested, all the wood older than the present season's growth. The fruiting wood can easily be distinguished from that which has grown during the season. By taking out that which is useless all the energy of the root is reserved for the new growth which is to supply the crop next season, and the danger from spread of disease somewhat diminished.

A close watch is kept for orange rust and any plant showing the least sign of it is immediately removed, care being taken to keep it from touching any healthy plant. Have sprayed with Bordeaux to prevent the spread of anthracnose, but without success.

Have usually followed the plan of paying pickers 1½ cents per quart at the end of each week and ½ cent extra at the end of the season to all who worked when wanted all through the season; those who work only when the picking is best do not get the extra ½ cent.

We tried at one time the plan of marketing all the berries the same day that they were picked, getting the pickers at work early in the morning and planning to complete the day's picking by 9 o'clock or soon after. It was difficult to get enough pickers so early in the morning, however, and as the dealers all wanted berries by 7 o'clock, and we were six to twelve miles from our markets, this was given up as impracticable.

My plan for the last two or three years has been to start the pickers about six to seven o'clock, a few of them usually getting at work much earlier. Through the middle of the day (an hour or two before noon and until perhaps three in the afternoon) they are employed at picking cherries, finishing up the day at raspberries.

Most of the morning pick of berries are marketed the same day, those picked in the afternoon being kept over and sent to town early the next morning; teams leaving for the nearby towns about 5 A. M., and for more distant points early enough

to get there as the retail stores open. The average price received for black raspberries the past year was 10¼ cents per quart.

It is important to keep well up with the picking and not to allow a lot of berries to become overripe on the bushes, as such fruit will mould and spoil very soon after going into the baskets. As to varieties, Kansas easily stands first, Cumberland does well in some locations. Have dropped all others, but ought to have one that would ripen a week earlier than Kansas.

For red raspberries much the same care and attention is needed as for blackcaps. A serious cane blight has attacked the Cuthberts, especially over a wide part of the State, and together with the *crown gall* has injured the plants to such an extent as to cause a scarcity of the fruit in all our markets, and while the prices realized during the past year or two have been high, owing to the short supply, the crop has been far from satisfactory.

While I have not practiced it as yet, I am inclined to think that it will be better to adopt the hill system for red raspberries. Planting them about six by six, tying to stakes. In this way each plant gets more sunlight and air, and the danger of disease spreading from one plant to another is reduced to a minimum. The Phoenix is one of the never reds that seems less susceptible to disease than the older kinds and is proving a good market berry.

Great care is needed in marketing red raspberries to have them picked before they are too ripe, and a good supply of pickers is essential to success. The oblong pint is the favorite basket in most markets.

In blackberries, the Eldorado is of good quality and quite productive. Snyder occupies about the same place that Ben Davis holds among apples, but by good culture and careful pruning to avoid too heavy a set of fruit, the quality can be much improved. There is good demand for nice blackberries and plenty of room for the man who will take pains to produce fruit of high quality. The seashore resorts are crowded at the time this fruit ripens. Much can be disposed of there at fancy prices if one is so situated as to take advantage of this trade.

Often a few quarts of berries that have wilted a trifle and turned a little stale will give a retail dealer all that he can sell through the afternoon and stock to commence on the next morning; the same man could dispose of several crates if those stale berries were out of the way, and some perfectly fresh fruit in their place. While it might not pay to grow raspberries and blackberries in the wholesale way that strawberries, peaches, and apples are being produced, a great deal of fruit can be marketed at good prices if placed before customers in fresh condition. No need of mentioning the advantage of clean, new baskets, for surely no one uses anything else now when they can be had for one-third of a cent.

Discussion.

A Member: Any experience with the Rathbun blackberry?

Mr. Molumphy: Rathbun winterkills so badly that I have given it up.

A Member: Do you think the red raspberry is going to be entirely destroyed by the root gall or cane blight?

Mr. Molumphy: I think some of the varieties are far less susceptible to those diseases; and by planting those varieties that are immune we can grow red raspberries profitably.

A Member: Why not plant the Golden Queen raspberry for market?

Mr. Molumphy: The Golden Queen is not a popular market berry on account of its color. There is not much call for it. Only a few can be disposed of to any advantage.

A Member: Is there any profit in growing dewberries? I understood from Mr. Plant that they were going to give them up, not finding them profitable.

Mr. Plant: I will say we had to give them up on account of winterkilling. They are not entirely hardy.

Mr. Hubbard was here called to the chair, and questions from the printed list were taken up and discussed.

Question 21. What are the three best apples for fancy trade and export?

Mr. Hoyt: I would set out first the McIntosh, second the Baldwin, and third—I guess—the Baldwin. [Laughter.]

Question 27. Should the Ben Davis apple and its progeny be grown in this State?

VICE PRES. HUBBARD: Anybody say it should? Anybody say it should not?

A MEMBER: Mr. Albiston has been quite successful with it.

VICE PRES. HUBBARD: Our motto here is not the motto of "The big red apple," but the motto of "The good red apple."

QUESTION 19. Local associations of growers for shipping fruit. Have they been successfully tried in Connecticut?

MR. FARNHAM: I have been associated a little in this business, but I call on Mr. Flight, who has been president of our association, to answer that question.

MR. FLIGHT: I could answer, yes. I happen to be the president of the association they call The Highwood Fruit Growers' Association, just out of New Haven, and we raised about three hundred acres of strawberries. We started an association, and Mr. Farnham and myself made arrangements with Mr. Ballou, who represents the Armour Refrigerator Company. We write to him every year for refrigerator cars. They furnish these at ten dollars a car. We load those cars, furnish our own ice, and the railroad delivers the goods at 22 cents per hundredweight, which virtually means the sixty-quart crate of berries. Now, we let everybody that grows berries in that neighborhood put their fruit into the cars. We tax them half a cent a quart for ice and refrigerator. At the end of the season we divide pro rata. We guarantee to the railroad company $44 on every car that goes out of Highwood; if there is a shortage, it comes out of the growers. At the end of the season we find it costs us about a quarter of a cent a quart, besides the $44 and our fruits. By coöperating, we get very cheap rates, and we can do it at a profit. If we didn't have this system—if we didn't ship by car-loads—we would have to pay a cent and a half a quart by Adams Express, and have fruit come into market sometimes in pretty good shape to make wine of; but with the refrigerator service it arrives in good shape. But, of course, in some neighborhoods where you can't have a full car-load, you couldn't do it. But where you can combine and load a car, it makes no difference if these cars stand on the track for two, three, four days—those berries will arrive in Boston in better shape than by express. And so by coöperating I would answer, yes; we can send our berries to market and make money.

A MEMBER: I would like to ask if anybody here is trying to raise the Snow (Fameuse) apple; and if not, why not?

PRESIDENT GULLEY: I don't know of any special reason. The fault is that it has scab. There is another, a full brother of the Fameuse, McIntosh—better in color. Nobody could tell them apart so far as the inside is concerned. It has scab, which, of course, the McIntosh also has. The apple is a good one, will keep well, but it is not as much of a success as in Vermont.

A MEMBER: It is bringing the highest price now.

PRESIDENT GULLEY: I think there is no question that McIntosh will sell anywhere.

QUESTION 16. What is the best treatment for trees injured by the recent severe freeze?

VICE PRES. HUBBARD: We had that matter up earlier, and a variety of opinions were expressed in regard to it. Some seemed to think that the trees frozen down to the ground were completely ruined.

MR. HALE: Dig them up.

A MEMBER: That depends, I suppose, upon how bad they are injured.

MR. MERRIMAN: Trees smaller than the wrist could be cut off and would sprout up—a small tree of one or two years old—up to three, perhaps. Cut down within three or four inches of the ground.

A MEMBER: Several have said that such trees failed to sprout entirely.

A MEMBER: They don't fail to sprout, but the sprout don't prove a success.

A MEMBER: The trees that Mr. Merriman refers to are small trees.

A MEMBER: Instead of letting them send out several sprouts, I would reduce the sprouts to one.

QUESTION 17. Is it safe to accept trees infested with San José scale after they have been thoroughly fumigated with hydrocyanic acid gas?

MR. HALE: I don't think there is any question but that if they have been properly fumigated in a proper fumigating-house, there will be no danger from their having been infested when put there. But I would advise everybody to prune trees carefully, burn all the trimmings, and dip in lime and sulphur mixture before planting. I would as lief plant the scale-infested trees as any other if they are not so badly infested as to be weakened.

A MEMBER: I would like to ask if you would dip any part of the root?

A MEMBER: I don't think I would, but I would dip them down to the root. But I see no harm in dipping roots and all.

QUESTION 6. Can any one predict the leading market apple ten years hence?

MR. MERRIMAN: Baldwin. That is law and gospel. It has taken the lead for the last thirty years, beaten Ben Davis out of sight. I defy a person to mention an apple that is equal to the Baldwin for general purposes for market.

QUESTION 15. Shall the apple or pear be planted in large blocks of single varieties, or should there be an intermingling of sorts?

MR. HALE: Well, most of our standard varieties are self-fertile and will fruit alone, but there is no question that the association of different varieties does strengthen the blooming and seeding of the fruit. But it is better, if you are going to do this, to plant a few in among the Baldwins even.

A MEMBER: How would the Roxbury Russet do?

MR. HALE: Any of our standard varieties help the others. It always pays to have good neighbors.

QUESTION 26. Why cannot canteloupes be grown on a large scale, at a profit, here in Connecticut?

A MEMBER: Can they be grown at all?

MR. MANCHESTER: I don't believe they can grow them now on either a large or a small scale.

QUESTION: Is there any method whatever by which the bacterial wilt on melons, cucumbers and squashes can be prevented?

MR. BENNETT: I don't think anything can be done except to destroy all the vines infected with it. If the ordinary blight, Bordeaux will check it. I think thorough work will have a tendency to control it.

A MEMBER: This bacterial wilt! When you get all the vines destroyed, the problem is solved.

MR. BENNETT: In most places in this State the blight is not bacterial, but the ordinary mildew kills most of the vines and in that way cleans out entirely the cucumbers and muskmelons.

PRESIDENT GULLEY: I wanted Mr. Eddy to speak on this question.

MR. EDDY: If that blight starts in the greenhouse, the profit is gone. I have been successful up to the last two years, but since then the melon crop has been an entire failure.

QUESTION 5. What caused the aphis to be so abundant last season, and what is the best way to combat them?

PRESIDENT GULLEY: Several wrote to me. I told them they could use tobacco, but by the time the letter reached them the aphis had disappeared. They go by streaks somewhat. It is hard to tell when they are going to come or when they are going to leave.

PROF. BRITTON: We have them every year to some extent, so far as my observation goes. There were a good many eggs around the buds on the apples; there are few this year, I notice.

MR. PLATT: If we find some on the opening buds, find half a dozen clustered in there, feeding on the very first growth, would it be an indication that we must go to spraying right there and then?

PROF. BRITTON: If they were abundant early in the spring, it might be worth while to spray early in the season with soap and water. I have looked in certain localities where they were plentiful last season, and have not found them. I have examined for them around New Haven.

QUESTION 2. How low should apple trees be headed?

MR. HOYT: I should head not lower than four feet. But if the people would like them lower—say, two feet high—I should like to grow that kind of tree. We could grow more to the acre.

VICE PRES. HUBBARD: Perhaps this covers more than the starting of the tree. How low should the head be kept during the bearing years?

QUESTION: Can we prevent the ravages of the apple maggot by spraying?

PROF. BRITTON: We think that spraying does very little good. It would do no good unless it acted as a repellent to hinder the flies from laying their eggs on the fruit. It may prove that spraying the trees may drive them off, and I think, as a rule, the sprayed apples are not quite as bad as the unsprayed ones.

QUESTION 4. From present knowledge, what is the future outlook for Japan plums?

PRESIDENT GULLEY: From my own limited experience, the outlook is that the black knot will take them.

MR. HALE: A certain weakness of the Japan plum seems to cause the trees to die when they are about six to ten years old, but the black knot is a preventable thing on ordinary plum trees. My opinion is, that there is a future for the Japan plum, but the orchards have to be renewed very often. The Italian buyers and sellers of fruit like the Japan plum.

A resolution in relation to the Parcels Post Bill now before Congress was introduced by Mr. Hale as follows:

Whereas, A bill now before Congress known as House Resolution 7874, providing for what is known as the Parcels Post, will, if it becomes a law, prove of great value to all our people, and especially so to those living in the rural districts, therefore be it

Resolved, By the Connecticut Pomological Society, that we heartily approve this bill and urge upon Congress its early passage and enactment into a law, and we urge upon our Senators and Representatives in Congress to do all in their power to secure its passage.

Resolved, That a copy of this resolution be forwarded to the President of the United States, and each of our Senators and Representatives in Congress.

Mr. Jas. L. Cowles, of Farmington, Conn., Secretary of the Postal League, was granted the courtesy of the floor and spoke in favor of the resolution and explained the objects of the bill now before Congress.

The resolution was unanimously adopted.

PRESIDENT GULLEY: We have one or two special committees to hear from.

The Committee on the Exhibit of Implements is now ready to report.

The following report was then read by the Chairman of the Committee, Mr. G. G. Tillinghast.

Report of Committee on Exhibit of Implements and Fruit Growers' Supplies.

We would present the following report of exhibitors and goods displayed:

Orchard Tools—The Cutaway Harrow Co., Higganum, Conn. 1 A-5 Reversible Double Action Extension Head Harrow. 1 A-6 Extension Head Harrow. 1 Reversible Sulky Disk Plow for light soils.

Fruit Packages—The Williams Mfg. Co., Northampton, Mass. Bushel Stave Basket with raised slat cover, for shipping apples, peaches, etc.

C. I. Allen, Terryville—Standard Quart Berry Baskets.

Butler & Jewell Co., Cromwell—Berry Baskets, also extensive line of pruning shears.

Spraying Apparatus—Harvey Jewell, Cromwell. The Hardie Barrel Pump, and Hardie Bucket Spray Pump, made by the Hook-Hardie Co., Hudson, Mich.

Rice Automatic Sprayer Co., East Windsor, Conn.—Compressed Air Spray Pump.

C. I. Allen, Terryville—The Eclipse Spray Pump, made by Morrill & Morley, Benton Harbor, Mich.

Frank B. Read, New York—Corrugated Apple Barrel Cushion, Apple Barrel Cap. Lace paper circles for decorating barrels of fancy fruit.

Nursery Stock—Gardner's Nursery, Cromwell. Samples of trees and plants.

J. G. Harrison & Sons, Berlin, Md., trees.

Large and interesting exhibit from the Connecticut Experiment Station, New Haven, comprising specimens of fungous diseases and injurious insects, also chemicals used in making spray mixtures.

A number of manufacturers of spray pumps and other supplies, who were unable to make exhibits this year, send catalogues and printed matter for distribution.

It is to be hoped that these firms may be induced to display their machines at the next annual meeting.

President Gulley: I will now call for the report of the Committee on Exhibits of Fruit.

Report of the Committee on Fruit Exhibit.

Mr. W. E. Waller presented the report of the Committee as follows:

Your Committee would report that they have examined the exhibit of fruit shown in the lower hall, and find displayed a total of 154 plates of apples, 6 of pears, 1 of cranberries and 3 of nuts. The exhibition is good, considering the unfavorable season in 1903, and reflects credit on the skill of the growers contributing fruit. The list of exhibitors is as follows:

Twenty-eight varieties apples, 6 of pears and 1 of cranberries, all kept in cold storage, from the Connecticut Agricultural College.

Samples of fruit taken from the collection which will form part of the Connecticut exhibit at the St. Louis Exposition.

The advantage of spraying is shown by samples of apples from sprayed and unsprayed trees.

Mr. E. M. Ives of Meriden exhibits 23 plates of 12 varieties of excellent apples, showing much care in growing.

Two plates of apples, 1 of hickory nuts from S. A. Griswold, West Hartford.

One plate of finely grown Peck's Pleasant, Geo. F. Platt, Milford.

Two plates Ben Davis, C. W. Roberts, Middletown.

One plate Baldwin, H. B. Curtis, Cheshire.

One plate Baldwin and 1 plate Greening, Daniels Bros., Middletown.

One plate of highly colored Baldwins from trees not sprayed, S. W. Eddy, Simsbury.

Four plates of very choice apples grown in Maine, exhibited by G. W. Staples, Hartford.

Three plates of apples, 1 plate of nuts, Chas. M. Perry, Southbury.

Four plates of choice apples, John Loomis, South Manchester.

Eight plates of apples, 5 Baldwin and 3 of other varieties, J. E. Andrews, New Britain.

One plate hickory nuts, F. B. Miller, Bloomfield.

One plate Baldwin, 1 of Rome Beauty apples, H. B. Buell, Eastford.

Three plates of apples, C. L. Terrell, Cheshire.

Two plates of apples, Joseph Smith, Cheshire.

One plate of Baldwin apples, J. H. Merriman, Southington.

One plate very choice Wolf River apples from F. S. Cobb, West Norfolk.

Four varieties fine apples, W. E. Waller, Bridgeport.

Seven varieties of Oregon apples shown by Hills & Co., grocers, Hartford. Splendid types of Western grown fruit.

Collection of 8 varieties choice apples, E. Manchester, Bristol.

Four plates apples, 1 of Baldwin, 1 of Spitzenberg and 2 of R. I. Greening, all very choice, from J. J. Goodwin, Hartford.

Collection 7 plates apples finely grown, H. E. Savage & Sons, East Berlin.

Six plates of apples, L. J. Robertson, Manchester Green.

Seven plates of apples, Joseph Albiston, South Manchester.

ELBERT MANCHESTER,
EDWIN HOYT,
GEO. F. PLATT,
C. A. WHITNEY,
W. E. WALLER,
Committee.

The foregoing reports were duly accepted by the Society.

In accordance with the by-laws of the Society, President Gulley then announced the appointment of the following Standing Committees to serve for the ensuing year:

Finance—N. S. Platt, New Haven; J. N. Barnes, Yalesville; J. C. Eddy, Simsbury.

Membership—Orrin Gilbert, Middletown; E. M. Ives, Meriden; Frederic Kelsey, Higganum.

Legislation—J. C. Eddy, Simsbury; Edwin Hoyt, New Canaan; A. C. Sternberg, W. Hartford.

Exhibitions—Elbert Manchester, Bristol; L. C. Root, Farmington; E. R. Bennett, Storrs.

Injurious Insects—Prof. W. E. Britton, New Haven; H. B. Buell, Eastford; Theo. M. Savage, Berlin.

Fungous Diseases—Dr. G. P. Clinton, New Haven; G. W. Spicer, Deep River; G. A. Parker, Hartford.

New Fruits—Stancliff Hale, South Glastonbury; G. C. Comstock, Norwalk; J. H. Putnam, Litchfield.

Markets and Transportation—J. H. Hale, South Glastonbury; J. T. Molumphy, Berlin; J. Norris Barnes, Yalesville.

Auditors—G. W. Staples, Hartford; A. B. Plant, Branford.

President Gulley: Ladies and Gentlemen—Our Thirteenth Annual Session is nearing its close. I congratulate you, one and all, upon its success. I believe you will agree with me that it has been an extremely pleasant and profitable gathering, and that we shall all carry home with us only the pleasantest of memories. (Applause.) As there seems to be on further business before this meeting, a motion to adjourn will be in order.

On motion, duly seconded and passed, the Society voted to adjourn, and at 4.15 the Thirteenth Annual Meeting was brought to a close.

That it was the most successful meeting in the history of the Society was evidenced by the fact that a membership of two hundred and seventy-eight, many of them being new members, was registered by the Secretary. And the total attendance was the largest witnessed at a Connecticut fruit meeting.

In addition to the excellent exhibits of fruits and machinery displayed in the lower hall, special mention should be made of the exhibits of decorations in the main hall, which formed an attractive feature of the meeting. The rear of the stage and sides of the balconies were hung with the Society's unique banners, which bore such striking legends as the following: "Connecticut *not* the land of the *big* red apple, but the land of the *good* red apple!" "Connecticut apples and peaches, than which there is none better grown!" "Her valleys, hills and plains shall blossom with fruit trees!"

At the front of the stage was a most beautiful and tasty display of choice fruits, including perfect specimens of Connecticut grown apples and pears, several plates of choice Maine apples shown by Mr. G. W. Staples, and a very fine exhibit of Western apples, very kindly contributed by Hills & Co., the Hartford grocers. These latter were noticeable for their beauty of form and color, and in their pretty baskets attracted much attention. To all who thus contributed to the pleasure and attractiveness of the meeting the Society renders its sincere thanks.

PLATE IV.

Condensed Report of Field Meetings, Institutes, etc., held in 1903.

Summer Field Meetings.

"Fellow Members—

"Your Executive Committee met recently and decided in favor of continuing these interesting and helpful gatherings. No feature of our work in the past has been more successful or benefited the Society and the members more than these outings. We should hold five or six of these field days during the next four months in the principal fruit sections of the State. The question is, will our members support the movement? Will you help us to arrange for a field meeting on some fruit farm or with the Grange in your vicinity? It is desirable, of course, to meet where some fruit crop is made a leading specialty and when it may be seen at its best; or if the Grange extends the invitation, to gather for a picnic lunch and then visit some nearby farm of special interest. The Society will share in the expense and the burden need not be heavy.

"Members, let us be alive to this opportunity and each one do his part toward encouraging these mutually pleasant and profitable meetings."

The above appeal was sent out to the members and friends of the Society early in the summer of 1903.

Owing to the fact that the season was an unfavorable one for growing crops, especially orchard and berry crops, fruit growers had little of interest to show and responses to the above were slow to come in. But later on conditions improved somewhat and prospects brightened and invitations for five field meetings were received, all of which were gladly accepted by the Society.

Very successful gatherings were held at Branford, Higganum, South Glastonbury, Andover and Wethersfield, each one adding

to the splendid record which this Society has made for summer field meetings; the lively interest and large attendance in every case attesting the value of this strong feature of our work.

SHORE OUTING AT BRANFORD POINT.

August 7, 1903.

A field day and shore dinner at the Branford Point House, combined with a visit to A. E. Plant & Son's farms in Branford, was arranged for the above date.

About 150 members and their friends enjoyed this outing. At 11 A. M. a business session was held in the parlors of the hotel, President Gulley presiding.

The matter of the Society's Fall exhibition was discussed, and it was decided to leave the selection of the place and date and other arrangements in the hands of the Executive Committee. It was announced that President Gulley, Secretary Miles and Treasurer Moore had been named as the committee on the part of the Pomological Society to act with the Connecticut Exposition Commission in arranging for the State's fruit exhibit at the St. Louis Exposition in 1904.

President Gulley said that growers would be called on to furnish choice apples of this year's crop to be stored for the exhibit.

The biennial meeting of the American Pomological Society at Boston in September was referred to and the selection of delegates to the same was left with the Executive Committee.

A number of timely fruit topics were then discussed. Growers present were asked to give reports on the outlook for the apple crop. From the reports given it was evident that the crop throughout the State would be variable.

Some counties reported prospects for a good crop. Litchfield, said B. C. Patterson of Torrington, would be light on winter sorts.

Tolland County reported a fair crop of Baldwins. J. H. Merriman of Southington said he expected a good crop of Baldwins. He added that he should give his orchards less cultivation hereafter and expects to get fruit of better keeping qualities.

Fungous troubles, which were unusually prevalent this season, came in for a share of the discussion. Dr. G. P. Clinton of the Connecticut Experiment Station addressed the meeting on this topic, and questions and discussions occupied the time until dinner was announced.

At 12.30 an excellent shore dinner was served by Landlord Sanford, and for nearly an hour the fruit growers and their lady friends discussed the menu of sea-food.

Following the dinner, busses were taken for the trip to the Plant farm, where many interesting sights awaited the visitors. The Messrs. Plant welcomed all, taking just pride in showing their splendid crops of fruits and general farm staples. The Plants are acknowledged to be expert farmers, but even in this unfavorable season their crops presented a fine appearance and were unusually thrifty. The first item of interest was the strawberry field, with a crop of onions growing between the rows of berry plants. This method of double cropping has been practised on this farm for some time, and both crops have succeeded well.

The raspberry and dewberry fields were next visited. Large and satisfactory crops of both fruits had been harvested, the picking season being just over. A few of the mammoth dewberries were found, however, that gave the visitors a taste of this delicious fruit, large, juicy and jet black. Mr. Plant grows chiefly the Austin variety and was led to plant the dewberry quite largely from the great success of the berry in Delaware and Maryland. While it ripens extra early and brings good prices, it is not a full success in this State on account of not being quite hardy. It is also a hard plant to control, the vines matting thickly near the ground and the fruit difficult to pick because of the many thorns.

The large pear orchard, carrying a good crop of fruit, the ample barns lighted by electricity and where the very heavy crop of hay had just been stored, and the extensive dairy, were all interesting and instructive points of interest.

Perhaps no single feature of Mr. Plant's farm is more worthy of mention than the intensive cultivation given each crop and field. Good care, intelligently given at the right time, cannot help but result in paying crops and must go far toward overcoming unfavorable weather conditions, even in a season like the present one.

Many of the visitors continued their trip to the Sea View peach orchard, a mile or two distant, and noted with interest and surprise the prospects for a fair crop of fruit this season. This orchard is located on high ground, not far from Lake Saltonstall, and has been a very profitable orchard from the start, there having been almost no "off-years" in its fruiting.

As the afternoon closed, the members left by trolley, all voting the "combination of shore picnic and field meeting" a success.

FIELD DAY AND PICNIC

AT HIGGANUM.

August 26, 1903.

"By invitation of the Higganum Grange and Geo. M. Clark, the Society will hold a Field Meeting at Higganum, Wednesday the 26th.

Members and their friends will gather at the Grange Hall, located one-third mile from the depot, where a basket-picnic-lunch will be served at noon.

The forenoon will be devoted to looking over the famous grass fields and plum orchards of Geo. M. Clark. Mr. Clark's success in intensive grass culture by which he has secured a yield of more than six tons to the acre, is well-known, and this visit to his farm will be of great interest to all farmers.

After dinner there will be speaking, music, etc., in the Town Hall. Prof. L. A. Clinton of the Storrs Experiment Station, J. H. Hale, Dairy Commissioner Noble and others will address the meeting on topics of timely interest."

In response to this invitation a very large number of members of the Society and others, farmers from nearly every section of the State, gathered at Higganum on the appointed day and enjoyed a very pleasant and profitable field day, receiving unbounded hospitality at the hands of the local Grange people.

Teams were taken at the railroad station and a trip made to Mr. Clark's farm and orchard.

This is the farm that has become famous all over the East for its immense crops of grass, its owner being the pioneer in the "new grass culture." The very heavy first crop had already been cut and cured, and the splendid hay

resulting was to be seen in the extensive barns. A second crop or "rowen" was being cut at the time of our visit. Mr. Clark's fields appear to be natural grass land and the soil heavy and well drained.

Much interest was shown by the visitors, and Mr. Clark was closely questioned as to his methods which have resulted in such mammoth crops as six tons to the acre. The plum orchard of several hundred trees of Japanese varieties was next visited and admired by all for their thrifty appearance and clean culture. A fair crop of fruit, largely of Abundance and Burbank varieties, had just been harvested.

The noon hour arriving, all were invited to the Grange Hall, where a tempting collation had been prepared by the ladies. It is needless to add that the visitors did full justice to this feature of the day.

Following dinner many took advantage of the opportunity to look through the factory of the well-known Cutaway Harrow Co., also the Scovil Hoe Shops. The tools made by both these concerns have almost a world-wide reputation.

At 2.30, an informal meeting was held in the Town Hall, which was largely attended, many from nearby towns being present.

President Gulley of the Society presided. Dr. L. A. Smith, chairman of the local committee of arrangements, welcomed the visitors in cordial and pleasant words.

Mr. Geo. M. Clark was next called upon to tell the company of his work in grass culture.

Mr. Clark said he had carried on his experiments for the benefit of the farmers of the State. He believed in the possibilities of Connecticut soil and its profitable development when properly managed. *Intensive cultivation* was the keynote of his success. In his grass work carried on for the past seventeen years he had first cleared the fields carefully, drained them, and then given the soil intensive and thorough cultivation before sowing the seed. Fitting the land with special tools, making a perfect seed bed, then fertilizing heavily and using a very liberal amount of seed had resulted in remarkably large crops of hay. With heavy applications of commercial fertilizers each year he had been able to cut heavy crops for many successive years.

Mr. Clark stated that he cultivated his soil forty times more than farmers did under the old methods and had found that it paid. Potash, bone and nitrate of soda, about one-third each, made up his complete fertilizer for grass. The potash has the effect of growing strong grass that will stand until cutting time. In his heavy seeding he uses fourteen pounds red top and fourteen pounds of timothy to the acre, and aims to grow nothing but grass on the land. He is now trying for a third crop in one season, and expects to reach it.

With regard to his plum orchard, Mr. Clark explained that his trees had been grown from the start without any fertilizer whatever. Thorough and constant cultivation had been given, —as many as twenty-four cultivations in a season—and had been found to produce trees of good size and sufficient fruitfulness. He had done this to show what can be accomplished by intensive cultivation alone, and that culture will largely take the place of manure.

The varieties in his orchard are Burbank, Abundance, Wickson, and Red June. All have done well, and the fruit finds a ready sale in the markets. Mr. Clark was attentively listened to and many questions were asked and answered.

Secretary J. B. Noble of the State Dairymen's Association followed Mr. Clark with compliments for the valuable work of the "grass man," which he said was a grand object lesson to every farmer present. What we all need is greater faith in our business and a more careful study of the crops we grow. Aim to produce more at less cost and our farming cannot help but be profitable. The speaker closed with an account of his recent trip to the Western States, which he said had taught him to have a greater love than ever for his native state.

Edwin Hoyt of New Canaan was called on and responded briefly. He was greatly pleased with Mr. Clark's results, and thought we should all learn from them to realize the possibilities of our soil when properly treated and handled. Let us all take home the lesson of *intensive culture,* and apply it on our own farms.

Director L. A. Clinton of the Storrs Experiment Station addressed the meeting in an interesting way. He thought others might get as good results as Mr. Clark if only they will follow his intensive methods. However, soils differ greatly, and this must be taken into account.

Questions relating to potato blight were discussed by Prof. Clinton, the audience manifesting much interest in the subject, because of the prevalence of the disease this season all over the State.

After several announcements from the chair concerning future field meetings arranged for, a hearty vote of thanks to the Grange, Mr. Clark and the Higganum people was passed and the meeting closed.

THIRD FIELD MEETING OF THE SEASON

At J. H. Hale's, South Glastonbury,

September 4, 1903.

Announcements sent out for this next gathering of the Society read as follows:

"By invitation of ex-President Hale, the members of the Society and all others interested in fruits are offered the opportunity of visiting his extensive orchards and nurseries, on Friday the 4th.

Probably no other horticultural establishment in New England can afford greater pleasure and profit than a visit to Mr. Hale's. And while the orchards are carrying but little fruit this season, the newly planted orchards and improved methods of culture are well worth seeing and studying.

In extending the invitation Mr. Hale says: 'Here at the Hale Farm, we are probably worse off than the average, yet some of the best lessons of life may be learned from failures, mistakes and disappointments. Crab grass and weeds smothering out clover; cow peas that wont grow; shot hole fungus; brown rot, black knot, yellows and scale, and little fruit on the trees, are things of orchard interest to all. A fifty-acre wood lot that has been cleared for orchard, and 75 acres in process of clearing may interest some, especially as I want suggestions as to how to reduce the cost of the work. Test plots of strawberries; fields of nursery plants, and the Warner Farm, devoted entirely to production of nursery trees and plants, may prove attractions for others, but the greatest show of all is the weedy, grassy plantation of a fellow who pretends to believe in clean culture.'

This is expected to be a notable gathering of leading fruit growers of this and other states. Such well-known fruit men as Geo. T. Powell of New York, Prof. F. A. Waugh of Massachusetts, H. W. Collingwood of the *Rural New-Yorker,* and others will be present and address the meeting.

Every Connecticut fruit grower should plan to attend. The ladies, too, are invited. It will be the best meeting of the season!"

No extra urging was needed to secure the presence of a large company of fruit men, their wives and friends; upwards of 350 were in attendance, nearly all the New England States and New York being represented by leading growers, who came to observe and profit by a visit to the Hale Farm, which is perhaps the most unique establishment of the kind in the country; and after enjoying Mr. Hale's warm hospitality and absorbing some of his enthusiasm, it is safe to say none went away disappointed.

The morning hours were spent in looking over the extensive peach and plum orchards and nurseries on the home farm, also the more distant clearings located on the higher ground where many rough fields have been subdued at heavy expense and planted to peaches with, so far, most excellent results. All agreed that only the courage of a man with faith in the fruit business and the possibilities of the Connecticut soil, could have carried through to success so large and difficult an operation.

While many of the orchards were not presenting their usual fine appearance on account of the peculiar season's very unfavorable conditions and the light crop of fruit, yet the lessons to be learned were fully as helpful as in a year of full crops and most favorable circumstances.

At noon all gathered on the spacious lawn, where a basket picnic lunch was enjoyed and the informal talk and discussion, always so pleasant a feature of these open-air meetings, was not lacking.

After dinner President Gulley called the assemblage to order, and introduced the host, Mr. J. H. Hale. Mr. Hale made one of his always enjoyable speeches, welcoming the visitors and referring to his orchard work of the season. He explained the special methods necessary to overcome the peculiar conditions of excessive moisture and why the orchards were found in clover sod rather than clean culture. The work of cutting back old trees to make new and vigorous ones was explained. Black knot in his plum orchard is becoming a serious question. What shall we do for this trouble as well as the shothole fungus and the leaf curl?

Many questions were put to Mr. Hale concerning the new clearings for orchard sites, and what the future treatment of these trees is going to be.

Mr. H. W. Collingwood, editor of the *Rural New-Yorker,* followed Mr. Hale. He said: We are changing our plans in fruit growing and this season are forcibly reminded that we do not know it all yet. We cannot stick to one rule or method year after year. Each must change to meet his own peculiar conditions. It's a wise man who sees when to change and does it. Our friend Hale may yet become a believer in the "Mulch System."

An orchard is the best monument a man can leave behind him. Aim to make your farms better. "Save a farm and save a boy" is his principle.

Following Mr. Collingwood's very pleasant address, the President called on A. W. Patch, the well-known Boston commission merchant.

Mr. Patch said he was glad to be there. Brother Hale is a friend to us all. He is a pioneer and goes ahead in fruit work and then others reap the benefits of his experimenting.

The apple market and the very high prices just now prevailing in Boston was referred to by the speaker. Even immature Baldwins and Ben Davis are being picked for export. Mr. Patch predicted that the box as a selling package for the apple will be a big thing within the next ten years.

The Apple Shippers' Association estimates that the apple crop of the country will be as large as last year's and the quality, Mr. Patch thought, would be much better. Many growers present criticised this statement, declaring that the crop would not be more than half that of 1902.

Hon. Geo. T. Powell of New York was the next speaker. He said he was in full sympathy with the purposes of such meetings as this.

This is a hard season for the farmer. Still there are blessings to be counted even in so discouraging a year.

Such a season as this will knock theories all to pieces. We must learn to adjust ourselves to changing conditions.

Mr. Powell told of the work on his own fruit farm in New York State. He follows the use of clover in his orchards and it is especially valuable in seasons of extreme drouth followed by heavy rainfall. The trees are doing well, although little fruit will be harvested this year.

The farmer or the fruit grower cannot tie himself to any one theory, but must be ready to change his methods if conditions require it. What the future treatment of the trees will be must depend upon the condition of the wood and the buds when next year comes.

The future of fruit-growing is bright. There is a good time coming and even now we are getting lots of pleasure as we go along, if not much profit. The money side of it is not all.

Horticulture offers an attractive field of work for young men. The planting of the trees, the selection of the best varieties and stocks, the care of the orchard and the selling of the fruit requires careful study and intelligent thought. The rewards for good work is sure to be great. The apple offers the best chance for success and profit here in New England, said Mr. Powell in closing his bright address.

The meeting then adjourned to allow visitors who arrived late to look over the farm.

A view of Mr. Hale's pleasant home and the company assembled on the lawn is given on Plate IV.

FIELD MEETING AT ORCHARD HILL FARM, ANDOVER.

September 15, 1903.

Mr. C. H. Baker and the Andover Grange entertained the members of the Society and many other fruit growers at Mr. Baker's fine farm in the town of Andover.

The weather was especially favorable for such an outing and it was one of the pleasantest field days of the season.

Visitors arrived on the morning trains and spent the forenoon in looking over Orchard Hill Farm; apples are Mr. Baker's leading fruit crop and the orchards presented a fine appearance and were well loaded with nice fruit. Baldwin, Spy, R. I. Greening, King, Peck's Pleasant are the principal varieties grown.

The orchards are in sod and have been for several years, Mr. Baker believing that to plow them would be detrimental to the trees.

A bountiful lunch was served at noon, which was enjoyed by about one hundred.

PLATE V.

Apple-picking time. View in the extensive orchard of C. H. Baker, Andover, Conn.

Mr. H. F. Tennant of Willimantic photographed the company after dinner. An interesting reproduction of the picture forms the frontispiece of this book.

A short informal meeting was held following the dinner. Music was furnished by Messrs. Tennant, Copley and Mrs. Lawton (clarionet, flute and piano), which was much appreciated. In opening the speech-making President Gulley referred to Mr. Baker's success as an apple grower, also the good work of the Society in helping the fruit growers of the State. Those present were invited to become members of the organization.

State Entomologist Britton spoke on the methods of making and applying the lime and sulphur mixture for San José scale and answered numerous questions.

Prof. L. A. Clinton of the Connecticut Agricultural College was called upon next and spoke on the question of tillage. He believed that tillage could be profitably employed in Mr. Baker's orchards.

A vocal solo by Mrs. Lawton of Providence was listened to with pleasure.

Dr. G. P. Clinton of the Connecticut Experiment Station called attention to the conditions that the farmer and fruit grower must meet and especially the need of a systematic fight against fungous diseases. The speaker said that the fungus to be seen on some of Mr. Baker's trees, attacking the leaves, was apparently one of the canker fungi. The importance of spraying was urged by Dr. Clinton.

The shipping of apples was discussed at length. Prof. Gulley gave his experience in the use of the bushel box as a selling package.

The profit of the box over the old style barrel in the Boston market was a safe one, he said; the box is sure to be used more extensively in the future.

After passing a hearty vote of thanks to Mr. Baker and the Grange, and listening to a cordial response from Mr. Wm. B. Sprague on behalf of the Andover people, the meeting was brought to a close.

MEETING AT WETHERSFIELD,

September 17, 1903.

The Wethersfield Grange invited the Pomological Society and the State Dairymen's Association to hold a joint field meeting in that town on the above date.

The weather was rather unfavorable and the attendance therefore was not as large as it otherwise would have been, but in every other respect it was a most successful meeting, bringing together, as it did, representatives of the two leading agricultural interests of the State.

The fine old town of Wethersfield, with its many attractive features, made an ideal place for such a gathering.

The State Prison is located here, and during the forenoon many availed themselves of the privilege extended by the management to visit it.

A bountiful collation was served in the Grange hall at noon. The afternoon proving too stormy for the proposed drive about the farming section of the town, the visitors assembled in the upper hall and held a very profitable session.

President Gulley presided and called upon E. C. Birge, President of the Dairymen's Association, to speak first. Mr. Birge said he was very glad to see the two societies meet together. They are working in harmony and should get together more often. The subject of how to provide humus for the soil is one that interests fruit growers and dairy men alike. His practice is to sow clover in the corn at last cultivation. Rye is also useful as a humus crop to plow under; two crops of clover and rye and then corn the next year, is a good rotation. We must build up our soil in order to get good crops, and it must be done as cheaply as possible.

Dr. G. P. Clinton of New Haven spoke next, and said he was glad to come to Wethersfield because there are so many special interests to be studied here. Gardening, seed raising and fruit growing, the town is celebrated in all these special lines. The melon blight and other diseases were discussed by the speaker.

Secretary J. B. Noble of the Dairymen's Association spoke in behalf of that organization and told of its good work along dairy lines. He was followed by Prof. L. A. Clinton of Storrs, in a very practical address.

One of the most interesting speakers of the day was J. H. Hale, who spoke next. He said it was very appropriate for the two societies to come together on such an occasion as this. "Berries and cream always go together."

The possibilities before the Connecticut fruit grower are great, said Mr. Hale. Western and southern growers tell us we have the soil, the markets and the demand for fine fruits and we should be alive to our opportunities.

The influences of cultivating fruits and flowers is refining and worth many times more than the dollars and cents we get out of it.

H. O. Daniels of Middletown spoke briefly and pointed out several valuable lessons to be learned from this season from the dairyman's standpoint.

Prof. W. E. Britton, State Entomologist, was asked to speak of the work of injurious insects. The prevalence of the aphis was discussed. Prof. Britton advised the use of soap and water spray for this pest. The San José scale is doing much damage all over the State. Lime, salt and sulphur wash has worked well in killing the scale. The insect breeds late into the fall and early winter, said Prof. Britton, and fall spraying is to be recommended. The spring application should not be neglected, however, as the wash will not remain on the trees through the winter and very thorough work is necessary to control the scale.

L. H. Mead of Keeny Park, Hartford, spoke next. He said the worst thing about this spray work is dreading it before you begin.

We don't always appreciate our advantages here in New England. Land is cheaper than in the West. Good markets are right at hand. The most beautiful scenery is ever around us and our work should be a pleasant occupation.

When abandoned farms are bought up by shrewd business men, it's time we waked up to our possibilities.

Mr. Hale seconded these remarks and urged farmers to look ahead in their business. The powers of our soil are not exhausted. What is needed is a system of cover crops,—clover, cow-peas, rye, etc., and let every bit of unoccupied land be covered with some crop for green manuring.

Mr. S. F. Willard of Wethersfield was the closing speaker. He said all were very welcome, but he regretted the weather

was such that the visit to leading farms of the town had to be abandoned. Mr. Willard said seed growing had been the leading specialty here for seventy-five years, but the times are changing and not so many are engaged in the business as formerly. However, stock seeds grown here are still in demand in every section of the country and have an established reputation.

A vote of thanks to the Grange was passed unanimously and the meeting adjourned.

Record of Institutes of 1903.

The last annual report, that for 1902, carried the record of the institute work of the Society up to the end of that year.

The present record, therefore, covers the season of 1903, and there were held in that period twelve institutes, all very successful gatherings, both in point of attendance and helpful influence upon the pomological interests of the State.

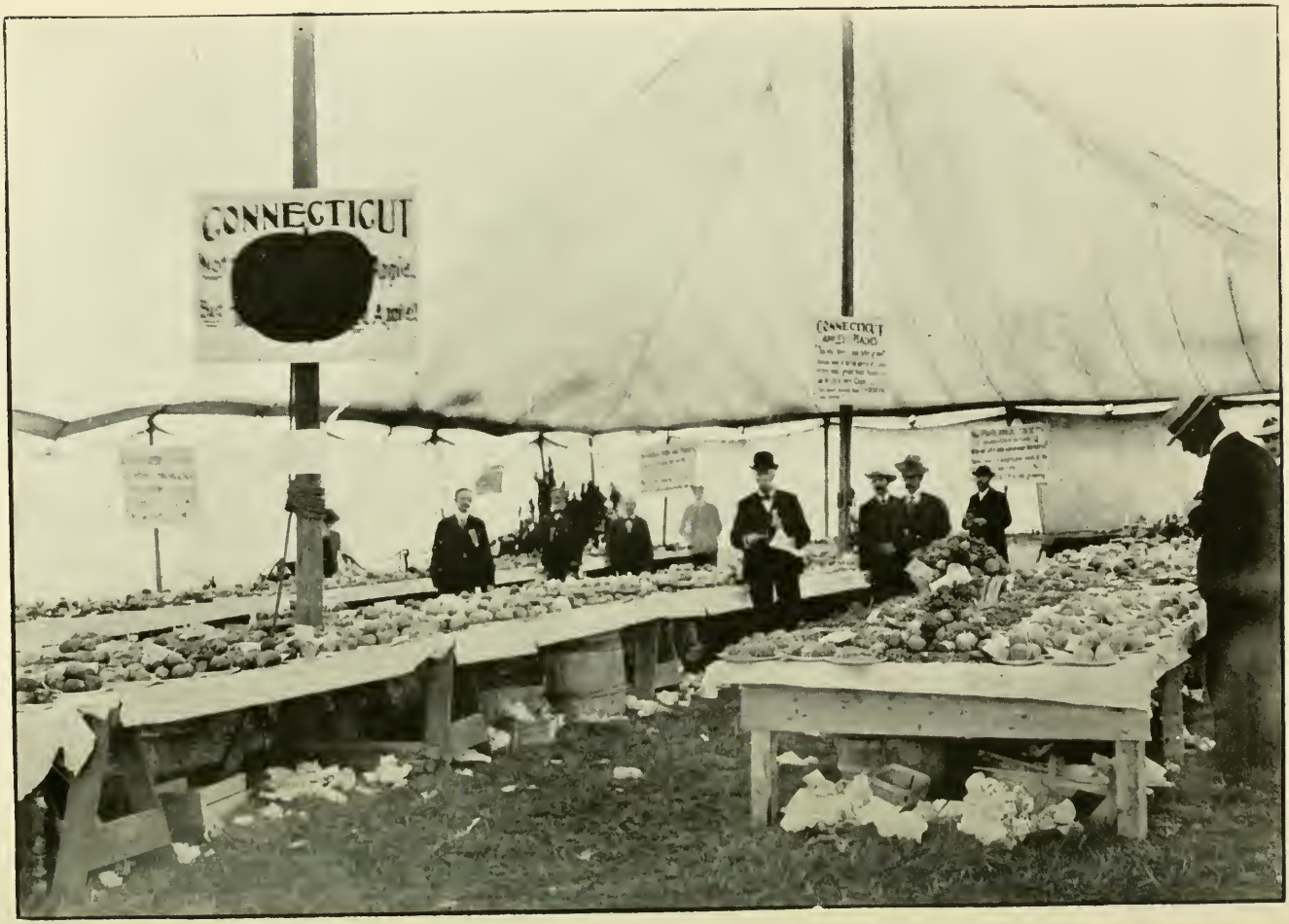
This Society has conducted institute meetings since 1895—one or more each year as opportunity offered.

The object of such work has been two-fold. To meet the increasing popular demand among all classes of people for a better knowledge of commercial fruit culture as well as the management of the home fruit garden, and secondly, as a means of introducing the Society to a larger number of people than could be reached at its annual meetings, held only once a year in Hartford. There can be no question but that both objects have been attained, as attested by the fact that calls for such meetings have rapidly increased year by year, until in 1903 the number held has reached twelve, with nearly as many more applications that we were obliged to refuse on account of lack of funds.

As stated elsewhere, up to the present time, in the absence of any State law regarding institute work, the matter has been optional with the Society, and there has been no conflict with institutes conducted by other agricultural organizations in the State.

In carrying out the institute feature, the coöperation of the Grange has been sought and the response has always been most hearty and willing.

In nearly every case the local Grange has extended the invitation, supplied the hall for the meeting, a collation at



The Society's Sixth Annual Exhibition at the Berlin Fair, September 23–24, 1903, when over 1200 plates of choice fruit were shown.

noon, helped in the advertising, and often furnished some local speakers,—in short, has had charge of the local arrangements, and received full credit for the success of the occasion.

It is not too much to say, that but for the cordial support of the Grange organizations these institutes would not have attained the success that they have. Without some local center of interest to start with, no farmers' institute is likely to be fully a success.

The institute season of 1903 opened January 27 at Glastonbury, followed by a meeting at Scotland January 29, at Madison February 10, at Watertown February 18, at Winsted February 19, at Deep River February 26, at New Canaan March 3, at Ellington March 4, at Prospect March 9, at Easton March 19, at East Canaan March 24, closing at North Haven March 27.

This series was the best ever held by the Society, the attendance ranging from forty to fifty in some of the smaller towns to one hundred and fifty at New Canaan and several other places. The cost averaged about $14 per meeting, or approximately $170 for the series.

To give any adequate report of the addresses, papers and discussions at these institutes it would be necessary to go beyond the limits of this volume. Suffice it to say that the proceedings were of a most practical nature, embracing a wide range of fruit topics from the preparation of the soil and the planting of the tree or vine up to the latest and most improved methods of packing and selling the product on the market.

The chief aim was to bring speakers with scientific and practical knowledge before an audience and following the addresses give each person present the chance to question and find out what they most wanted to know.

The following program is a fair sample of what was offered in each meeting:

PROGRAMME AT NEW CANAAN.

March 3, 1903.

OPENING AT 10.30 A. M.

Address of Welcome.....Rev. J. H. Hoyt
Address—"Profitable Apple Orcharding."..... Prof. A. G. Gulley, Conn. Ag'l. College, Storrs
Paper—"The Market for Connecticut Fruits,—How Can it be Enlarged?".....N. S. Platt, New Haven.

Recess.

AFTERNOON SESSION AT 2 O'CLOCK.

Music.

Address—"Some Destructive Fruit Insects and How to Control Them" .....

Prof. W. E. Britton, Conn. Exp. Station, New Haven.

Address—"Important Points in Successful Peach Culture".....

J. H. Hale, South Glastonbury.

A Question Box will be open to receive any inquiries on fruit topics, to be discussed as time permits. This will be a prominent feature of the meeting, and all are welcome to participate.

The speakers, with the exception of one meeting, were all called from within the state, and received pay only for their traveling expenses. They were either men on the staffs of the experiment stations or practical orchardists and small fruit growers, selected for their wide experience along special lines of work.

The list of workers included J. H. Hale; N. S. Platt, State Pomologist; Edwin Hoyt; Prof. W. E. Britton, State Entomologist; Prof. A. G. Gulley of Storrs; J. H. Merriman; Stancliff Hale; Prof. L. A. Clinton of Storrs; G. S. Butler; Dr. G. P. Clinton of the State Station; E. M. Ives; A. C. Sternberg; J. M. Hubbard; J. H. Putnam; J. C. Eddy; J. Norris Barnes; J. T. Molumphy, and Chas. I. Allen.

Results show conclusively the practical value of the Society's institute work during 1903.

Sixth Annual Fruit Exhibition.

The Society's annual exhibition of fruits was again held at Berlin, in connection with the Annual Fair of the Berlin Agricultural Society, September 23 and 24, 1903.

Invitations to exhibit were also received from the Fair Associations in Wethersfield and Willimantic, but the Executive Committee were led to choose Berlin on account of its central location and the very liberal offer made by that Fair. Practically all the arrangements for the exhibit were made by the Berlin people and placed at the disposal of our Society without any cost whatever.

The exhibition was a large and excellent one and an even greater success than the year previous, so that the Committee

felt justified in holding it in the same place two years in succession.

The weather being especially favorable, the attendance at this fair was larger than usual, and consequently a great number of people visited the Pomological exhibition and had an opportunity of seeing some of the results of the Society's work.

A corner of the exhibition tent, Berlin, 1903.

The large tent provided for the exhibit was none too big to accommodate the exhibits of fruit, which numbered over 1200 plates, besides many displays of canned fruits and jellies, fruit growers' supplies, nursery stock, and also specially packed barrels and boxes of apples. This latter class was a new feature and one in which much interest was shown both by exhibitors and visitors.

Eight exhibitors competed for the prizes, and displayed their skill in selecting and packing the fruit in the most approved market packages.

Mr. J. H. Hale acted as judge in this class, and in making the awards commented as follows:—(and his remarks apply so well to the general packing of apples for market, that they are inserted here),—"Your committee finds among the dozen exhibits in this class considerable difference as to what constitutes the *"best"* method of packing and style of package as regards the barrel or box for apples.

First premium barrel of Greenings (exhibit No. 7) are fine, clean apples, double paper wrapped and packed in a new barrel. Exhibit No. 307—barrel of Fall Pippins were clean, sound fruit, unwrapped and all faced upward. Exhibit No. 187 was a very fine barrel of Baldwins, but the apples were unwrapped and packed in a second-hand flour barrel. No high grade fruit should ever go to market in a second-hand package, for even if the barrel is apparently well cleaned, flour dust from the crevices will be dusted over some of the fruit and injure its appearance and salable value.

Exhibit No. 7, of Baldwins, was also packed in second-hand flour barrels, but being double paper wrapped, however, the fruit escaped injury from dust.

Among the exhibits in boxes,—a comparatively new package for apples,—Exhibit No. 65, box of Greenings, was a superb lot of fruit packed in 50 lb. California box, solidly made and of clear white wood. The fruit, however, was not packed solid enough to carry in the best shape.

Exhibit No. 4—Box of Fall Pippins packed in a two-section ventilated box or crate, a light, strong and neat package that shows all the fruit to good advantage; and were it not for the fact that a ventilated package does not keep fruit as well as a tight box, this package would be counted of value.

Other exhibits of premium Greenings, Spies and Baldwins, with the fruit double wrapped and packed in 50 lb. boxes, apparently home-made, while not quite as uniform as Nos. 65 and 4, yet of clean white wood, and the fruit was sound and perfect."

The exhibit, as a whole, was very creditable, and pointed some quite valuable lessons in packing and packages. It is a feature worthy of continuing at future exhibitions.

The number of growers who exhibited was larger than ever before—seventy-five in all. Seventy of this number were awarded premiums amounting to $515.75.

As a complete list of the awards was published and sent out soon after the exhibition, it is unnecessary to include the same in this report.

Those who acted as judges were: Apples, all classes, Prof. John Craig of the Agricultural College, Cornell University; pears, all classes, N. S. Platt, New Haven, and G. C. Comstock, Norwalk; peaches and plums, C. H. Savage, Storrs; grapes, all classes, R. A. Moore, Kensington; canned fruits, etc., Dr. L. A. Smith and Mrs. Smith and Mrs. Frederic Kelsey, Higganum; nuts, Prof. W. E. Britton, New Haven; unclassified exhibits, Prof. A. G. Gulley, Storrs. The expense of the exhibition to the Society was about $100.

Our annual fruit shows are certainly proving "eye-openers" to the people, especially in the matter of showing what fine products may be grown in Connecticut, and to those growers who attend them they are wonderful educators. The fairs of the State are beginning to recognize the advantages of such an exhibit on their grounds, and it is safe to say we shall not be troubled to find ways and means for holding our exhibitions in the future.

LIST OF MEMBERS*

OF THE

CONNECTICUT POMOLOGICAL SOCIETY

...1904...

Abbe, Linden S., Hazardville.
Abbey, Mrs. Chas. Pelton, Portland.
Abbott, Arthur J., Woodbury.
Albiston, Joseph, So. Manchester.
Albiston, James H., So. Manchester.
Allen, Chas. D., Cheshire.
Allen, Chas. I., Pequabuck.
Allen, W. F., Jr., Salisbury, Md.
Andrews, Cornelius, New Britain.
Andrews, J. E., New Britain.
Andrews, Miss Hattie C., New Britain.
Anthony, Wm. E., Southington.
Ashton, Frank B., Middletown.
Ashton, Mrs. F. B., Middletown.
Atkins, T. J., Middletown.
Atwater, Edwin B., New Haven, Box 207.
Atwater, E. B., Plantsville.
Atwood, C. B., Watertown.
Atwood, Oscar F., Brooklyn.
Atwood, Rev. E. F., Hartford, 670 Garden St.
Austin, Franklin B., Norwalk.
Averill, H. O., Washington Depot.
Ayer, Robert E., Unionville.
Babcock, G. P., Tolland.
Bacon, Eben W., Middletown, R. F. D. No. 1.
Bacon, Mrs. Eliza M., Scotland.
Bailey, F. B., Durham.
Baker, C. H., Andover.
Baldwin, Walter H., Cheshire.
Barber, C. W., New Britain.
Barber, Henry A., Danbury.
Barber, Joseph, Rockville.
Barker, N. C., Lebanon.
Barnes, A. G., New Milford.
Barnes, J. Norris, Yalesville.
Barnes, John R., Yalesville.
Barnes, Morris A., Collinsville.
Bass, Lucien, Willimantic, R. F. D. No. 2.
Bassett, George E., Clintonville.
Beach, A. S., Bridgeport, R. D.
Beach, Frank H., Stratford.
Beach, G. S., Winsted.
Beach, J. H., Branford.
Beach, Z. P., Wallingford.
Beckwith, G. C., Nepaug.
Beers, F. H., Brookfield Centre.
Beers, S. Perry, Greenfield Hill.
Beisiegel, Jacob, Woodbridge.
Beman, W. L., Bloomfield.
Benham, Leonard M., Highwood.
Benham, Wilbur H., Highwood.
Bennett, E. R., Storrs.
Bernhard, Albert, Meriden.
Bidwell, A. F., Canton Center.
Birdseye, E. B., Middletown.
Birdsey, E. T., Middletown.
Birge, E. C., Westport.
Bishop, Jared, Cheshire.
Blaisdell, M. L., Clinton.
Blakeman, J. H., Oronoque.
Blakeslee, G. N., Clintonville.
Bliss, Ethelbert, Ludlow, Mass., R. F. D.
Bliven, J. B., New London.
Boardman, F. E., R. D. Middletown.
Bogart, Geo. A., Chester.
Bogue, Nelson, Batavia, N. Y.
Bolles, C. P., Wilbraham, Mass.
Bradley, E. L., Norwalk.
Bradley, F. N., Derby.
Bradley, Miss Gertrude U., Waterbury.
Bradley, Mrs. Sarah, Bristol, R. F. D.
Brainerd, M. N., Southington.
Brewer, C. S., Hartford.
Bridge, H. J., Hazardville.
Brinsmade, W. H., Bridgeport. R. F. D. No. 4.
Bristol, George B., Middlebury.
Britton, Prof. W. E., Experiment Station, New Haven.
Brockett, Hobart J., Clintonville.
Brooks, Geo. H., Clinton.
Brown, G. F., Cannon.

* This list is corrected to April 1, 1904.

Brown, T. L., Black Hall.
Brownson, S. B., Shelton.
Buell, H. B., Eastford.
Burdick, A. B., Norwich, R. D.
Burnham, T. H., Bloomfield.
Burr, C. R., Hartford.
Burr, W. H., Westport.
Bushnell, Huber, Berlin.
Bushnell, Mrs. Huber, Berlin.
Butler, George E., Meriden.
Butler, George S., Cromwell.
Butler, Hezekiah, Wethersfield.
Callahan, Thos., Newington.
Camp, David N., New Britain.
Carter, Geo. S., Clinton.
Case, Edmund E., New Britain.
Chamberlain, L. P., West Hartford.
Chambers, Frederick, Waterbury.
Child, C. H., Woodstock.
Clark, Arthur F., Higganum.
Clark, George M., Higganum.
Clark, H. E., Middlebury.
Clark, O. R., Higganum.
Clinton, E. B., Clintonville.
Clinton, Dr. George P., Expr. Station, New Haven.
Clinton, Prof. L. A., Storrs.
Close, Albert W., Greenwich.
Cobb, F. S., West Norfolk.
Coe, C. W., Durham Center.
Coe, Ernest F., Edgewood Ave., New Haven.
Coe, Harry S., Waterbury.
Coe, W. T., Northford.
Colby, Benj. F., Kensington.
Coleman, M. L., Seymour.
Coleman, M. P., South Coventry.
Colton, F. B., Hartford.
Comstock, C. L., Danbury, R. D. No. 20.
Comstock, G. C., Norwalk.
Conn. Agricultural College, Storrs.
Cook, Allen B., Farmington.
Cook, S. G., Branford.
Cooke, Marcus E., Wallingford.
Copley, Wm. E., Hazardville.
Cornwall, W. W., Kensington.
Cowles, Gustavus, Farmington.
Cowles, Percy, Farmington.
Crowell, L. L., Middletown.
Cuneo, Joseph, Meriden.
Curnow, Wesley, Cheshire.
Curtis, Carlos W., Plantsville.
Curtis, H. B., Cheshire.
Curtis, Mrs. H. B., Cheshire.
Curtis, Newton M., Sandy Hook.
Curtis, Robert W., Stratford.
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Dart, C. O., Vernon Center.
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Davis, E., Branford.
Davis, Richard, Middletown.
Dearden, Greenwood, Tolland.
*De Bogart, F. Van, Bridgeport.
Deming, Chas. J., Litchfield.
Deming, H. P., Robertsville.
Dempsey, John, Broad Brook.
Denny, Geo. W., North Branford.
Dewhirst, E. W., Bridgeport, R. F. D. No. 7.
Dickinson, Robt. J., Woodbridge.
Dickinson, W. L., South Britain.
Dimon, J. J., Hartford.
Doolittle, Arthur H., Bethany.
Doolittle, F. W., Milldale.
Doolittle, H. M., Meriden.
Doolittle, S. B., Wallingford.
Douglass, G. F., Collinsville.
Dow, H. L., Middletown.
Dowd, Frank C., Madison.
Downs, W. S., Derby.
Duffie, C. R., Bantam.
Dunham, H. C., Middletown.
Dyer, E. W., Berlin.
Eddy, J. C., Simsbury.
Eddy, John S., Unionville.
Eddy, S. W., Simsbury.
Ellis, W. L. L., Ansonia.
Ellsworth, E. J., Windsorville.
Elsworth, Frederick, Hartford.
Elton, H. L., Waterbury, R. F. D.
Elwood, J. F., Greens Farms.
Emmons, F. A., East Canaan.
Ennis, R. H., Hampton.
Ensign, E. R., Silver Lane.
Faber, W. A., Waterbury, R. F. D.
Fairchild, H. L., R. D. No. 4, Bridgeport.
Fairclough, Mrs. Thos., Wolcott.
Farnham, A. N., Westville.
Fawthrop, Walter, Cromwell.
Felt, Dr. E. P., Albany, N. Y.
Fenn, Benj., Milford.
Fenn, Dennis, Milford.
Fenn, Robert M., Middlebury.
Ferson, E. B., Chicago, Ill.
Fisher, A. C., Boston, Mass., 40-42 Commercial St.
Flight, S. A., Highwood.
Forbes, J. S., Burnside.
Ford, Chas. C., Washington Depot.
Fowler, W. E., Clintonville.

* Deceased.

Francis, D. G., West Hartford.
Francis, J. H., Wallingford.
French, W. H., Wolcott.
French, Mrs. W. H., Wolcott.
Frisbie, Martin M., Southington.
Frisbie, M. W., Southington.
Frost, Frank M., Yalesville.
Frost. Willis E., Bridgewater.
Fuller, Wm. H., West Hartford.
Fuller, Mrs. Wm. H., West Hartford.
Gager, J. M., Willimantic.
Gallagher, J. F., Waterbury, R. F. D.
Gardner, B. L., Wallingford, R.F.D.
Gardner, J. W., Cromwell.
Gardner, R. H., Cromwell.
Garrigus, Lewis, Waterbury, 28 Grove St.
Gates, W. F., Willimantic.
Gaylord, E. F., Bristol.
Gaylord, E. W., Bristol.
Gaylord, Herman J., Gaylordsville.
Geer, Everett S., Hartford, 64 Niles St.
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Gilbert, Henry, Middletown.
Gilbert, Josiah, Wilton.
Gilbert, Orrin, Middletown.
Gilbert, Mrs. Orrin, Middletown.
Gilbert, Thomas, Middletown.
Gold, C. L., West Cornwall.
Gold, T. S., West Cornwall.
Goldsborough, H. H., Eagleville, R. D.
Goodwill, W. E., Southington.
Goodwin, Francis, Hartford, 783 Main St.
Goodwin, H. H., Cheshire.
Gordon, Mrs. Robert, Shelton.
Gould's Mfg. Co., Seneca Falls, N. Y.
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Griffith, Geo. H., Bristol.
Griffith, Wm. J., Bristol.
Griswold, Henry H., Guilford.
Griswold, H. O., West Hartford.
Griswold, J. B., Newington.
Griswold, R. S., Wethersfield.
Griswold, S. A., West Hartford.
Griswold, S. P., West Hartford.
Griswold, Thomas, & Co., South Wethersfield.
Griswold, W. F., Rocky Hill.
Groesbeck, F. O., Hartford.
Gulley, Prof. A. G., Storrs.
Hale, G. H., South Glastonbury.
Hale, J. H., South Glastonbury.
Hale, Moseley, South Glastonbury.
Hale, Stancliff, South Glastonbury.
Haley, E., Mystic, R. F. D.
Hall, Chas. H., Cheshire.
Hall, G. D., Wallingford.
Hall, G. H., Manchester.
Hall, Wilbur H., Wallingford.
Hannah, A. J., Bristol.
Hannah, W. L., Bristol.
Hardy, Alfred, Rockville.
Harrison, Orlando, Berlin, Md.
Hart, Ernest W., Forestville.
Hart, E. S., Plainville.
Hart, G. W., Unionville.
Hart, Mrs. S. A., Kensington.
Harvey, C. F., Woodbury.
Harwood, B. E., Chester.
Haskins, L. O., Scotland.
Hatch, Gilbert H., Whigville.
Healey, E. M., Plainville.
Hersey, G. M., Hartford.
Higgins, Wm. L., M.D., South Coventry.
Higgins, Wm. W., Maywood, N. J.
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Hills, T. Morton, M.D., Willimantic.
Hinman, R. S., Stevenson.
Hitchcock, L. R., Watertown.
Hollister, A. T., So. Glastonbury.
Hollister, G. H., Storrs.
Hollister, Kirkland, South Glastonbury.
Hollister, Milton D., East Glastonbury.
Hollister, Orrin C., Manchester.
Holt, Joseph E., Chester.
Hopson, G. A., Wallingford.
Hornbeck, H. F., Chester.
Hotchkiss, B. S., Waterbury.
Hotchkiss, Chas. M., Cheshire.
Hotchkiss, Chas. T. W., Cheshire.
Hough, E. J., Wallingford, R. F. D.
Hough, Eli S., Colchester.
Hough, George E., Wallingford, R. F. D.
Hough, Joel R., Wallingford.
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Howland, Isaac, Brooklyn, N. Y.
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Hoyt, Edwin, New Canaan.
Hoyt, James, New Canaan.
Hoyt, Stephen, New Canaan.
Hubbard, Clement S., Higganum.
Hubbard, Elmer S., Higganum.
Hubbard, Frank C., Middletown.

Hubbard, Mrs. Frank C., Middletown.
Hubbard, J. M., Middletown.
Hubbard, Robert, Middletown.
Hubbard, R. P., Middletown, R. D. No. 2.
Hull, James, Durham.
Hunt, W. W., Hartford.
Huss, J. F., Hartford.
Hutchinson, E. L., Andover.
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Ives, Julius I., South Meriden.
Jackson, Elmer, Wilton.
Jackson, George O., Norwich.
Jackson, J. C., Norwalk, R. D. No. 42.
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Jenkins, Dr. E. H., Experiment Station, New Haven.
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Jennison, E. F., Hartford.
Jerome, F. M., New Britain.
Jewell, Harvey, Cromwell.
Jewell, Mrs. Harvey, Cromwell.
Johnson, Dr. F. E., Mansfield Depot.
Kelley, Edward, New Canaan.
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Kelsey, David M., Durham.
Kelsey, Frederick, Higganum.
Kelsey, James H., Middletown.
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King, Horace, Thompsonville.
King, Mrs. J. E., Rockville.
King, N. N., R. D. Suffield.
Kingsbury, Andrew, Rockville, R. D. No. 2.
Kingsbury, John E., Rockville.
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Kirkham, John S., Newington.
Knapp, M. C., Danbury.
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Koehler, Hans J., Hartford, 46 Smith St.
Lane, A. N., Wolcott.
Lang, C. E., Winsted, R. F. D. No. 2.
Lapsley, Arthur B., Pomfret Center.
Lathrop, E. B., Rockville, R. D.
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Lee, Wm. H., Guilford.
Lee, W. S., Hanover.
Leete, A. Minor, Leete's Island.
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Lewis, H. D., Annandale, N. Y.
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Loomis, John, South Manchester.
Lord, J. W., Warehouse Point.
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Lowrey, Mrs. L. L., Bristol, R. D. No. 1.
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Lummis, Geo. E., Southington.
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Manchester, E., Bristol.
Manchester, E. F., Bristol.
Manchester, George C., Bristol.
Manchester, H. G., Winsted.
Manchester, Robert, Bristol.
Mansfield, Peter, West Hartford.
Mansfield, Wm. H., W. Hartford.
Marshall, Joseph, Seymour.
Martin, J. A., Wallingford.
Mason, H. H., Farmington.
Mason, W. S., Farmington.
May, W. B., Hartford.
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McCormack, Wm., Wolcott.
McKinney, Wm. B., Farmington.
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Mead, L. H., Hartford, 272 Westland St.
Mead, Seaman, Greenwich.
Merriman, J. H., Southington.
Mexcur, George, Bloomfield.
Miles, H. C. C., Milford.
Miller, C. H., Berlin.
Miller, F. B., Bloomfield.
Mills, D. E., Bristol.
Mills, Geo. E., Farmington.
Minor, Geo. N., Bristol.
Miramant, Mrs. Jos., Meriden, No. Broad St.
Mitchell, Herbert E., So. Manchester.
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Molumphy, Thos. J., Berlin.
Monson, W. B., Mt. Carmel.
Moore, Charles, Southington.
Moore, R. A., Kensington.
Morgan, E. P., Cheshire.
Morgan, Timothy J., Yalesville.
Morris, Chas. G., New Haven, 139 Orange St.
Morse, C. Z., Shelton.
Morse, H. C., Wallingford.
Morse, J. J., East Berlin.
Morton, E. G., East Windsor.
Moses, A. A., Unionville.
Mosley, A. W., Glastonbury.
Moss, J. W., West Cheshire.
Moss, Julius, West Cheshire.

Mueller, C. J., Berlin.
Mulford, Walter, State Forester, Windsor.
Munson, W. A., Huntington, Mass.
Munson, R. A., Highwood, Station 4.
Nettleton, H. I., Durham.
Newton, J. P., Saybrook.
Noble, H. C., New Britain.
Noble, John B., East Windsor Hill.
Norton, A. F., New Britain.
Norton, Geo. B., Berlin.
Norton, F. N., New Canaan.
Norton, John, Kensington.
O'Brien, Jas. B., Sandy Hook, R. F. D. No. 17.
Orcutt, P. B., Clintonville.
Paddock, J. H., Wallingford, East Main St.
Paradise, J. G., Newington.
Parker, G. A., Hartford.
Parker, John B., Jr., Poquonock.
Parsons, Frank W., Hazardville.
Patten, D. W., Clintonville.
Patterson, B. C., Torrington.
Pauley, Geo. A., New Canaan.
Payne, Frank C., Portland.
Payne, George K., Portland.
Payne, Lyman, Portland.
Pease, B. F., R. D. Fairfield.
Pease, C. P., Ellington.
Pease, Simeon, R. D. Fairfield.
Peck, A. C., West Cheshire.
Peck, B. A., Bristol.
Peck, Chas. E., Cheshire.
Peck, James S., Westville.
Peck, S. M., Woodbridge.
Peck, W. N., Mt. Carmel Center.
Pero, Louis, South Glastonbury.
Perry, Chas. M., Southbury.
Perry, F. L., 302 Park St., Bridgeport.
Petremont, Mrs. E., Shelton.
Phelps, E. J., Enfield.
Phelps, Mrs. E. J., Enfield.
Phillips, Alan, Farmington.
Pierpont, A. B., Waterbury.
Pierpont, A. J., Waterbury.
Pierpont, W. L., Waterbury.
Plant, A. B., Branford.
Plant, Albert E., Branford.
Platt, Frank N., Milford.
Platt, G. F., Milford.
Platt, John R., Prospect.
Platt, N. D., Milford.
Platt, N. S., 395 Whalley Ave., New Haven.
Platt, William F., Milford.
Plumb, David M., Prospect.
Pomeroy, E., Windsor.
Porter, D. G., Waterbury.
Porter, Marshall, Hebron.
Post, Prichard E., Essex.
Potter, D. C., Middletown.
Potter, H. F., North Haven.
Potter, H. W., Glastonbury.
Powell, E. C., Springfield, Mass.
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Prisk, T. H., Yalesville.
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Pyatt, Chas. S., Unionville.
Race, R. H., North Egremont, Mass.
Rae, James S., New Canaan.
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Rice, J. L., Ludlow, Mass., R. F. D.
Rice, W. B., Meriden.
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Roberts, Earl C., Middletown, R. F. D. No. 2.
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Roberts, S. W., Middletown.
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Rogers, E., New Britain.
Rogers, F. D., Monson, Mass.
Root, L. C., Farmington.
Root, T. H., Farmington.
Ruedlinger, C. N., Hartford.
Rugg, J. H., Stratford.
Russell, Dr. Gurdon W., Hartford.
Russell, S., Jr., Middletown.
Sanderson, Lucien, New Haven.
Sanford, F. D., Shelton.
Saunders, A. W., Forestville.
Savage, Clarence H., Storrs.
Savage, H. E., R. D. Berlin.
Savage, Theo. M., Berlin.
Savage, Willis I., Berlin.
Schmidt, E., New Canaan.
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Schwink, J. G., Meriden.
Scranton, Charles W., Box 234, New Haven.
Sedgwick, Harry, Falls Village, R. F. D.
Seeley, Edward, R. D. Bridgeport.
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Shedd, G. V., Preston.
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Shepardson, W. M., Middlebury.
Shepperd, W. S., Shaker Station.
Sherwood, N. H., Southport.
Silliman, J. F., New Canaan.
Skinner, M. G., Higganum.

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Smith, George R., Cromwell.
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Smith, Harry C., Vernon Center.
Smith, H. P., North Haven.
Smith, J. B., Berlin.
Smith, J. Elliot, Wolfville, Nova Scotia.
Smith, Joseph, West Cheshire.
Smith, Dr. L. A., Higganum.
Smith, L. P., Lebanon.
Smith, Nathan E., Woodmont.
Smith, S. A., Clintonville.
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Splettstoeszer, Herman, R. D. No. 2, New Britain.
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Squires, Chas. L., Branford.
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Sternberg, Max R., Meriden, Johnson Ave.
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Stevens, J. C., East Canaan.
Stevens, N. S., East Canaan.
Stevens, W. W., Clintonville.
Stimson, Rufus W., Storrs.
Stirling, J. C., Rockville.
Stockwell, S. T., West Simsbury.
Stokes, E. B., Westbrook.
Stone, D. E., Cheshire.
Stoughton, Lemuel, East Windsor Hill.
Strickland, E. C., Middlefield.
Strumpf, George, Burnside.
Strumz, O. F., Bristol.
Sturges, W. S., Shelton.
Sturges, Mrs. W. S., Shelton.
Sumner, J. White, Bolton.
Talcott, Phineas, Rockville, Box 1166.
Taplin, Alvin, Forestville.
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Taylor, Edward J., Southport.
Teed, Geo. E., Weatogue.
Terrell, Chas. B., Wallingford.
Terrell, C. L., Cheshire.
Thomas, T. L., Forestville.
Thomas, W. T., Groton.
Thomas, Wilbert H., Highwood.
Thompson, Chas. A., Melrose.
Thompson, C. H., Berlin.
Thompson, Chas. J., Berlin.
Thompson, John, Ellington.
Thompson, Thomas, Derby.
Thompson, Thomas, Highwood.
Thompson, Wm. H., East Haddam.
Thomson, Paul, West Hartford.
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Townsend, Wm. W., Middlebury.
Trask, Abner, Silver Lane.
Trask, W. W., Silver Lane.
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Tucker, Geo. A., West Cheshire.
Tucker, Henry V., Middletown.
Turkington, Frank H., East Morris.
Turney, Oliver, Fairfield.
Tuttle, A. J., East Haven.
Tyler, W. M., Waterbury.
Usher, R. C., Plainville.
Vibberts, L. A., New Britain.
Wadsworth, A. R., Farmington.
Waite, Ernest H., Cobalt.
Wakelee, G. M., Shelton.
Wakeman, J. S., Saugatuck.
Wakeman, L. P., Greens Farms.
Wakeman, S. B., Saugatuck.
Walden, B. H., Experiment Station, New Haven.
Waldo, Gerald, Scotland.
Waldo, Harold B., Naubuc.
Wallace, Edgar G., Prospect.
Wallace, E. J., Wallingford, West Quinnipiac St.
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Wander, Eugene A., Hartford.
Warncke, Louis H., Cannon Station.
Warner, E. C., Clintonville.
Watrous, J. L., Meriden.
Watson, S. S., Tracy.
Weber, Alfred, Hartford.
Webster, Daniel, Berlin.
Webster, George, Jr., Rockville.
Welch, G. H., Torrington.
Wells, Dudley, Wethersfield.
Wells, Dudley, 2d, Wethersfield.
*Wells, L. J., South Woodstock.
Wells, L. S., New Britain.
Wells, S. M., Newington.
Welton, Ard, Plymouth.
Welton, E. B., Tracy.
Welton, Mrs. H. L., Waterville.
Werking, Adolph, Plantsville.
West, S. B., Columbia.
Wheeler, F. H., Middlebury.

* Deceased.

White, Edgar D., Andover.
White, W. R., Vernon.
Whitham, Chas. H., Southington.
Whitham, Wm., Southington.
Whitney, C. A., Upton, Mass.
Whitney, Howard R., Southington, Box 50.
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Wilcox, R. C., & Sons, Guilford.
Wilcox, W. F., Meriden.
Wilder, F. W., Watertown.
Willard, S. F., Wethersfield.
Williams, A. W., New Britain.
Williams, R. W., Bristol.
Williams Mfg. Co., Northampton, Mass.
Wilson, Samuel, Wolcott.
Wilson, Thos., New Canaan.
Wolcott, E. R., Wethersfield.
Wolcott, R. R., Wethersfield.
Wood, G. P., Ellington.
Wood, O. S., Ellington.
Woodbury, S. J., Cheshire.
Wooding, M. N., Hamden.
Woodruff, Dwight, Plymouth.
Woodruff, R. H., Guilford.
Wright, A. M., Centerbrook.
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