REPORT OF

THE CONNECTICUT POMOLOGICAL SOCIETY

FOR THE YEAR 1900

With proceedings of the Tenth Annual Meeting, 1901

EDITED BY THE SECRETARY

PUBLISHED BY

THE CONNECTICUT POMOLOGICAL SOCIETY

1901

Officers of The Connecticut Pomological Society (1901)

President ..... NORMAN S. PLATT,
395 Whalley Ave., New Haven

Vice-President ..... JOHN C. EDDY, Simsbury

Secretary ..... HENRY C. C. MILES, Milford

Treasurer ..... ROSWELL A. MOORE, Kensington

COUNTY VICE-PRESIDENTS

HARTFORD — A. C. STERNBERG, West Hartford
NEW HAVEN — E. M. IVES, Meriden
FAIRFIELD — A. C. INNIS, Stratford
LITCHFIELD — B. C. PATTERSON, Torrington
MIDDLESEX — C. E. LYMAN, Middlefield
NEW LONDON — CLIFTON PECK, Yantic
WINDHAM — H. B. BUELL, Eastford
TOLLAND — PROF. A. G. GULLEY, Storrs

STANDING COMMITTEES

Injurious Insects

Prof. W. E. BRITTON, New Haven,
Connecticut Experiment Station
HARVEY JEWELL, Cromwell
Prof. H. A. BALLOU, Storrs

Fungous Diseases

J. H. PUTNAM, Litchfield
Dr. W. C. STURGIS, New Haven
Connecticut Experiment Station
A. B. PLANT, Branford

Markets and Transportation

J. H. HALE, Chairman,
South Glastonbury

New Fruits

F. L. PERRY, Chairman,
Bridgeport

Exhibitions

GEORGE S. BUTLER, Chairman,
Cromwell

Membership

ORRIN GILBERT, Chairman,
Middletown

Legislation

A. R. WADSWORTH, Chairman,
Farmington

Mount Pleasant Press
J. HORACE MCFARLAND COMPANY
HARRISBURG · PENNSYLVANIA

EDITOR'S NOTE

OUR Society has now attained its tenth year. The record of its work has been preserved and the main features published in Volumes I and II. A third is now added, comprising a report of the year 1900, together with the proceedings of the Tenth Annual Meeting, and herewith is presented to the members of the Society and the people of the state generally.

We are glad to say that the employment of a stenographer has made it possible to record the various papers, addresses and discussions, *in full*, which we trust will be appreciated by all. So complete a report will, doubtless, be welcomed by such members as have been unable to attend all of the meetings, as well as by those who may seek the latest and most reliable information concerning the science and practice of fruit-growing and the progress of Connecticut Pomology.

The rapidly increasing importance of Connecticut as a fruit-producing state and the fact that of peaches alone there are nearly *three million* trees now growing in the state, and the value of this year's crop reaches over $650,000, places the organization representing this large industry in a position of importance and responsibility. Therefore the work of this Society must appeal to every lover of fine fruits within our state.

The editor takes this opportunity to thank all who have in any way assisted in the preparation of this report, and especially those who kindly loaned the plates for illustrations.

H. C. C. MILES,
Secretary.

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 roll.

ARTICLE IV.—Its officers shall consist of a President, First Vice-President, one Vice-President from each county, 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 the 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 Transportations.

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.

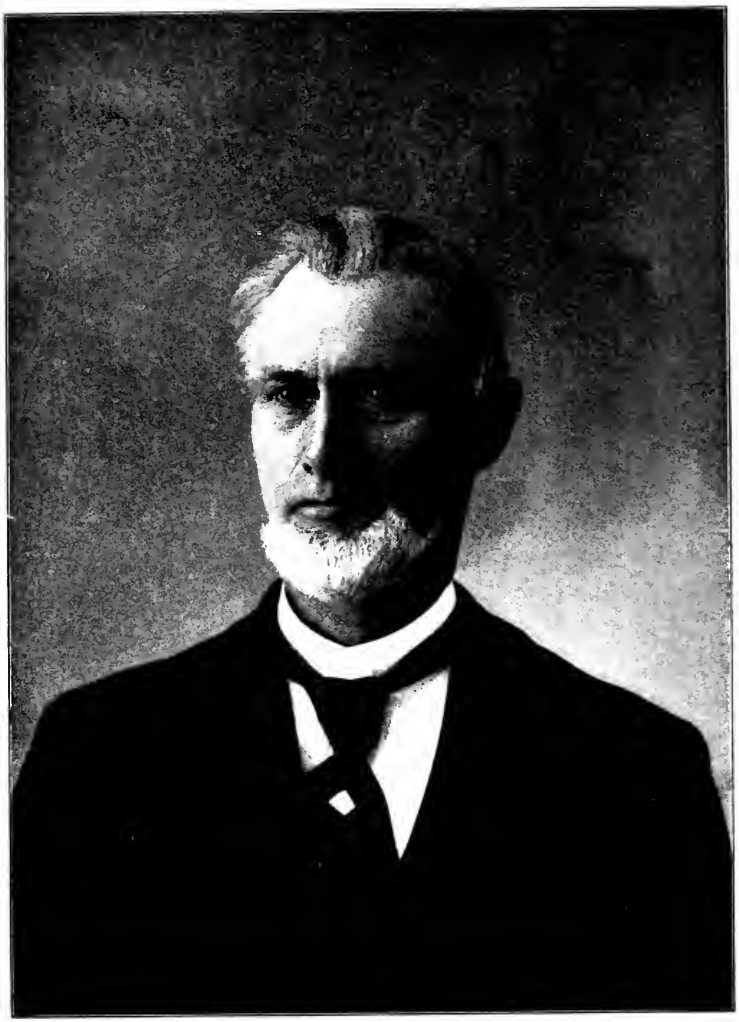
ARTICLE VIII.—It shall be the duty of the Committees on Insects and Diseases to investigate in regard to the ravages of these enemies of fruit culture, and to suggest how best to combat them and prevent their spread; to answer all inquiries addressed to them by the members as far as possible, and, when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



Josiah W. Merriman

SOUTHINGTON, CONNECTICUT

President Connecticut Pomological Society, 1900

Proceedings of the Tenth Annual Meeting of The Connecticut Pomological Society

THE tenth annual meeting of the Society was opened at Jewell Hall, Hartford, Wednesday morning, February 6, 1901, at 10.30, with President J. H. Merriman in the chair. An unusually large number of members and others were present for the opening session. President Merriman, in opening the meeting, delivered the following address:

Fellow Officers and Members of The Connecticut Pomological Society:

Agreeably to the custom established by my predecessors, I suppose I am expected to address you with a few introductory remarks. As you know, I am not a public speaker, and certainly not one like Brother Hale, who has but to open his mouth and it talks itself; nevertheless, I will submit a few thoughts for your consideration. I am glad to meet and greet so many familiar faces, and congratulate you all upon the auspicious circumstances under which our Society enters upon the new century. It is now three hundred strong, and yet is but a child ten years old. The past year has been one of unprecedented growth and prosperity, showing that interest in horticulture is broadening and deepening in our state through the organized influence of our Society. For many of us, however, who own commercial orchards disappointment has been written in many lines. The apple crop promised a bountiful yield until the 12th of September, when the hurricane that swept over our land from Texas to Maine blew off about 80 per cent of the fruit,

which was thereby rendered worthless, and many thousand baskets of peaches shared the same fate. The very severe drought of the summer caused the fruit to be smaller than usual, and in some sections what would otherwise have been thousands of baskets of peaches was fruit which was wilted and dried on the trees, and perfectly worthless. Berries and small fruits also suffered severely. In many sections of the state peach buds were killed during the winter, and by the late freeze in May, except on high elevations and near the shore; which again proves the wisdom of setting our peach trees on elevated locations. Then again, the past month has been fraught with much damage, due to ice. Many valuable trees have been ruined, and many more badly broken and damaged. But, while these reverses are fresh in our memory, as we look back for the last eleven years I can recall but one total failure of the peach crop in our state. This certainly should inspire us with renewed courage and hope to press steadily on towards the mark of the high calling, for it is the highest calling connected with agriculture. It brings into its fold and front the brainy, thinking men who work with mind and muscle. It requires little thought to plant and care for a hill of corn or potatoes, but to properly set, trim and care for fruit trees from year to year, to study their habits and food supply, to fight insects and fungous diseases, and to thin, pick and prepare the fruit for market, are all things that need forethought and judgment. He who will not look ahead and take time by the forelock will himself be led by the forelock.

In regard to the peach yellows, I regret that so many small growers seem so indifferent to its ravages. They have little to lose, and seem to care little for the losses of others. Eternal vigilance in pulling out and destroying trees infected with this pest is well understood by commercial growers to be the price of success. The small growers need the prompting influence of judicious laws to awaken in them a sense of honor and justice. If our legislative committee could frame a law that would be effective, and at the same time that would not be burdensome upon those parts of our state where peaches are not raised, it would be of great importance to our fruit interests; a law that would at once appeal to the honor and sense of justice of our

Legislature, and recommend itself to the good judgment of our people. In this connection the prohibition of selling diseased fruit in our state would be advisable.

As I look back over the last decade and consider the work this Society has done in producing luscious fruits for the multitude of working men and women, in its uplifting and refining influence upon its members, and in still further beautifying our naturally beautiful scenery,—converting our bushy hill-tops into picturesque scenes of rows of handsome trees laden with most luscious fruits, and painted by the hand of God in artistic beauty, and having a richness of flavor that challenges the world to equal, and which brings so much joy and health to the consumer, I think we may well congratulate ourselves upon having done a great and good work that the state may well feel proud of, and prompt it in the future to give us that substantial aid that will enable us to still further extend the benefits of this Society in all parts of the state so that our work may still further redound to its honor and glory.

I consider our field meetings a potent factor for good. Their object lessons are not easily erased from memory. We learn from others' successes, as well as from their failures. We are greatly indebted to our Experiment Station for its cooperation and help. The Station gives us scientific knowledge. We must make the practical application. We give them some knotty problems to work out in the laboratory, some of which as yet baffle their skill, but all of which we hope they will soon conquer, and particularly as to the little midget which is only detected by the most powerful microscope, but which caused the blue, ashy appearance of our peach leaves during the past season.

I would particularly remind you of the importance of our horticultural exhibit at the Pan-American Exposition to be held at Buffalo during the coming summer. We are to represent the honor and reputation of our state in this department of agriculture. I trust each member will feel a personal responsibility in this matter, and so contribute to its success as to reflect honor upon our Society and state. We occupy but a small space upon the map, but are of large proportions. We excel in arts and sciences, and in institutions of learning. We have

Yale, the peer of all institutions of its kind, sending forth its students to light the lamps of civilization in its westward march. Our cities and towns are hives of industry, giving employment to skilled labor which, in turn, gives us the best markets in our country. We are in close touch with shipping points, so as to export our surplus supplies. We have the climate and the soil, inviting us to cultivate and occupy, and God has promised the increase. "*Qui transtulit sustinet*,"—He who planted will sustain. That is indeed a fitting motto for our beloved state. We are co-workers with God.

"Faith and works go hand in hand.
To till the soil was God's command.
Then, if success you would attain,
Work with hand and heart, soul and brain."

Brothers, we come here to disseminate knowledge. He who would hoard up his experiences for himself is unworthy of our Society. We come here to send the plowshare of thought deep into the soil of bigotry and ignorance, to cultivate thoroughly, and let in the sunlight of God's truths as they shall be revealed to us, and bring forth fruit that shall redound to our honor and glory.

The report of the secretary, H. C. C. Miles, for the past year was then presented, as follows:

THE SECRETARY'S REPORT

Mr. President and Members of the Society:

Of the several farmers' organizations in the little state of Connecticut, none, I think it is safe to say, has been of more service to the people of the state than the Connecticut Pomological Society in the past nine years; and now, at the opening of its tenth year and the beginning of a new century, it is most gratifying to be able to say that the Society is stronger than ever and promises to continue its usefulness for many years to come.

As required by our rules, I shall try to give you briefly a

report of the Society's condition, with some account of the past year's work as far as the secretary's office is concerned.

Perhaps of most interest to you will be a report of our membership. We have enrolled sixty-five new members during the year. The total number of bona fide members to-day is 309. (I say bona fide members for the reason that our by-laws have determined that no person whose membership fees are unpaid for two years shall be considered a member, and while we have in all 339 names on the roll, the thirty delinquents must be counted out when we consider our actual membership.) Perhaps it is to be expected that from year to year some will drop out of the list, but we can but think it more a matter of carelessness than that a man should be so short-sighted as to withhold a dollar for membership in a progressive horticultural association when the returns are so large. We must all admit that the problem of keeping our present membership, also gaining new members, is no easy one to solve and requires much effort on the part of your officers. Other societies have the same thing to contend with. I want to say right here that our Membership Committee, especially Mr. Ives, has done excellent work in securing new members. Our county vice-presidents might also fulfil their duty in this respect and interest fruit-growers in their sections in our work. In addition to this, let each member see that his own membership is renewed promptly, and also bring into the Society at least one friend during the year. From February 1, 1900, to February 1, 1901, I have received and paid over to the treasurer for membership fees and from other sources, in all $244, and have drawn orders for the payment of bills to the amount of $901.10.

During the past year the Society has held six meetings, —the annual meeting in February, two institutes, two field meetings and the annual fall meeting and exhibition. Of the annual meeting of a year ago I need not speak. The proceedings have been printed and are here ready for distribution.

March 16, 1900, a second invitation from the Grange in Southington to hold an institute in that town was accepted. Despite a severe storm of snow and ice, a good meeting was

carried out, with an excellent attendance, and the discussions were instructive and interesting.

Another institute meeting was held at Stratford March 31, through the courtesy of Housatonic Grange. Coming to this section of the state for the first time, the Society was welcomed heartily and well entertained. New members were added and an increased interest in fruit culture among the people of Fairfield county resulted from this successful institute.

We would urge other granges and local organizations to coöperate with the Society in holding these pleasant and profitable one-day meetings. There is no better means of bringing about a better appreciation of farm life and the pleasures and profits of fruit-growing We have now on file invitations from several granges, and hope to carry out five or six institutes this winter. We believe no better use can be made of the state's money as given to the Society than in conducting such meetings as these.

The series of field meetings as planned for last summer was somewhat handicapped by the serious drought that affected most fruit crops. Many of our members expected to entertain the Society, but few wanted to exhibit "drought-stricken" farms. Messrs. A. E. Plant & Son, of Beauford, however, had courage to invite the members to visit their farm June 19. The large number of visitors found there were no apologies to be made for this fine fruit farm, and all were loud in their praise of the thrifty-looking fruit and vegetable gardens, the orchards, and especially the extensive strawberry fields, for which latter fruit Messrs. Plant have gained so enviable a reputation. All felt well repaid for attending and expressed a desire to visit Brother Plant again at no very distant day.

August 28 the Society met on the grounds of the State Experiment Station at New Haven, nearly two hundred members enjoying the hospitality of Director Jenkins and his staff of workers. Much of practical interest to the fruit-grower was seen in the various departments of the Station, and after a lunch a trip was made to the large vegetable and fruit farm of the Atwater Brothers, near Cedar Hill. Here the discouraging effects of dry weather were plainly to be seen; yet it taught a valuable lesson in that the fruit farmer must be prepared to meet

such difficulties and overcome them. I must add that some splendid vegetables and fruits were shown in the packing sheds, attesting to the skill of Messrs. Atwater as market-gardeners. These field meetings continue to be one of the most valuable features of our work, affording as they do the opportunity to see fruit-growing conditions as they really exist and to discuss around the growing tree or plant problems of vital importance to us all. We should aim to hold one or more each month from June to October, and they would repay many times the cost of time, money and effort. We hope there will be a generous response next season to the appeal for farms to meet upon.

Again our Society scored a success in its annual fall exhibition held at Middletown, October 4–5, 1900, the best show in many respects we have yet held. There were fifty-six exhibitors, nearly eight hundred separate entries of plates of fruit, and $320 was awarded in premiums. The showing of handsome, perfect specimens of the fruit-grower's skill was magnificent and called forth the admiration of all who saw it. Surely our annual fruit exhibits are the finest thing of the kind ever seen in Connecticut and compare favorably with those of older and larger state societies. Great credit should be given our Middletown members and friends for their hearty support of this exhibition.

The $500 annual appropriation from the state has been of great assistance in carrying out the Society's work. It makes possible the publication of a creditable report of our proceedings, which is important as showing to the state what we are doing, but also as a means of preserving valuable horticultural information for future reference, and if the work is continued will form a library of greatest value to every cultivator of the soil. Can any one contend but that the money thus spent is well invested, and could not an increase, even, be used to still greater advantage? Why should not the state contribute liberally to an industry so closely related to the welfare of her farmer citizens?

In conclusion, let me say that if the Society has attained strength and success the responsibility of keeping up to the standard rests upon us all, officers and members. Your officers have, I believe, done what they could with the means at their command. Let us all be loyal to the organization and strive to

keep it what its friends say it is, "the liveliest, brightest and most practical society of fruit-growers in America."

Those who have so kindly assisted me in my labors the past year know that I appreciate it and thank them.

Respectfully submitted,

H. C. C. Miles, *Secretary*.

On motion duly seconded and passed, the secretary's report as read was accepted.

The President: "Next will be the report of the treasurer of the Society, Mr. R. A. Moore."

THE TREASURER'S REPORT

Report of the treasurer of the Connecticut Pomological Society for the year 1900.

Received

1900			
Feb. 2.	Cash on hand	$482 52	
" 15.	Cash from H. C. C. Miles, M. fees	151 00	
March 31.	Cash from H. C. C. Miles, M. fees	29 00	
June 19.	Cash from H. C. C. Miles, M. fees	26 00	
" 21.	Cash from Comptroller	110 09	
Sept. 20.	H. C. C. Miles	15 00	
Oct. 5.	H. C. C. Miles	12 00	
Nov. 15.	Orrin Gilbert, Sale of Apples	2 00	
Dec. 6.	Comptroller, State Appropriation	387 45	
1901			
Jan. 9.	Orrin Gilbert, Premium Returned	2 50	
" 23.	Comptroller	142 77	
" 31.	H. C. C. Miles	11 00	
			$1,371 33

Paid

1900			
Feb. 15.	Cash paid Prof. Beach	$30 00	
" 15.	Edwin Van Alstyne	18 76	
" 15.	L. R. Jones	31 12	
" 15.	A. G. Sharp	6 00	
" 15.	Rent of Hall Y. M. C. A.	35 00	
" 17.	J. H. Hale, Hotel Bills	10 50	
" 20.	H. C. C. Miles, Expenses	12 15	
	Amounts carried forward	$143 53	$1,371 33

		Amounts brought forward	$143 53	$1,371 33
March	2.	A. C. Gilbert, Lantern Slides	3 65	
"	11.	N. P. Daniels, Printing	12 75	
"	15.	Tuttle Morehouse & Taylor, Printing	14 75	
April	3.	Milford Citizen, Printing	2 50	
		Error in check Oct. 20, 1898, H. C. C. Miles	4 00	
May	15.	H. C. C. Miles, Office Expenses	14 32	
June	4.	H. C. C. Miles, Salary for 1899	50 00	
"	22.	J. Horace McFarland Co., Printing Reports	414 00	
"	23.	N. P. Daniels, Printing	24 76	
"	23.	R. A. Moore, Postage on Report	21 49	
"	23.	F. J. Sperry, Reporting	25 00	
"	23.	Tuttle Morehouse & Taylor	5 50	
"	23.	Milford Citizen, Printing	1 50	
Sept.	18.	H. C. C. Miles	16 95	
"	18.	J. R. Clark, Printing	13 80	
Oct.	4.	Orrin Gilbert, Cash for Printing	1 50	
"	6.	Clarence H. Ryder, Printing	6 50	
"	23.	H. C. C. Miles, Expenses	22 61	
Dec.	7.	Premiums	314 00	
"	15.	R. A. Moore, Expenses and Postage	13 14	
1901				
Jan.	31.	J. R. Clark, Printing	15 65	
"	31.	H. C. C. Miles	14 05	
"	31.	J. H. Merriman	6 15	
"	31.	H. C. C. Miles, Salary	50 00	
"	31.	Clarence H. Ryder, Printing	7 00	1,219 10
		Balance in the Treasury, Feb. 1, 1901		$152 23

Still due from the State	$112 55
Balance in the Treasury	152 23
Total amount due from State and in Treasury	$264 78

R. A. MOORE, *Treasurer.*

MR. MOORE: "That shows the transactions for last year. We are in hopes that the Legislature will do something better for us than they did last year."

THE PRESIDENT: "Before the treasurer's report can be accepted it will have to be referred to the auditors. Also the bills will have to be audited. I will appoint Mr. Fenn, of Milford, to act with Mr. Sternberg, of West Hartford, as auditors, the other member of the committee not being present."

THE PRESIDENT: "I will ask Mr. E. M. Ives to report for the Committee on Membership."

MR. IVES: "Mr. President and Members: It seems to me that our Society's growth is an all-important thing, and I wish it might be so regarded among the fruit-growers of Connecticut. We may think that we get a little aid from the state, and that our dollar apiece that we pay in does not amount to very much in helping out the Society, but our urgent needs are so great that we want all the dollars that we can get, and the increase in our membership is one of the things which gives our Society prestige, and at the same time gives us a strong incentive to work. We all want to build up a large, vigorous society, and while we have had a fair measure of success in that line of late we want to be still more successful, and that object would be attained if all would join this Society which gives us such good results. It costs only a dollar to join, and that certainly is not very much to put out when you consider the benefit that comes every year, especially with our publication. I think our most prolific source of membership is perhaps in our institutes and field meetings. We often drop right into new territory, and thereby secure new members. We cannot always get them out, but by going to them, and bringing to the growers the benefits of our meetings, it interests them, and has a strong influence in inducing them to join.

"I think it will be a great benefit to us if we can have a few institutes held during the coming months. If there are any openings for us I am sure we can soon arrange a program, and we can give a good program, too, without going out of the state for speakers. We have plenty of material here; men who are able to interest an audience in any part of the state, and I hope there will be openings for several institutes this coming spring. Now I hope to see a good many, or all of the present membership that are here, give us their dollar. Encourage the Society by renewing your membership. Keep in touch with it."

MR. HALE: "Mr. President, I want to say just a word about this committee report. We have interfered with the dignity of our conventions, somewhat, in years gone by in constant urging of our members to do their duty, to pay their dues. We have had to do it. Week before last I was out at a meet-

ing of the Western New York Horticultural Society. I have heard about them before, and they most always have a hall full of members, but the greatest number of paid memberships that they have had before this year was 560. This year they had the secretary's desk outside of the door, and the secretary was kept busy issuing membership tickets which admitted them to the hall, and they had a recorded membership of about eight hundred,—more than they had ever had before. They had 800 who paid to go in. In other words, in other years when they seemed to have had just as big a crowd at the meetings, 240 people had been going in and listening to the urging of the secretary that there was the place to chip in without paying any attention to it, but this year when they adopted that plan there was that large number of people over the highest membership before who wouldn't stay out when they had to pay to get in. I don't suppose we could adopt that plan here. I wish we might."

THE PRESIDENT: "That suggestion comes a little too late for this year."

MR. HALE: "We are asking and receiving state aid, so we could not shut out anybody I suppose, but their plan showed how many would pay rather than be shut out."

SECRETARY MILES: "I would like to say right along that line that down in New Jersey they are doing away, or talking of doing away entirely, with membership fees, and asking the state to support them entirely. I do not think we want to take either that course or the one Mr. Hale has just referred to. I think we can be more or less independent of the state, as we have been, and at the same time I do not think we want to shut out any one who wishes to come in and hear our proceedings. At the same time we would like that little extra dollar to help 'grease' the machinery."

THE PRESIDENT: "The report of the next committee, that on legislation, will have to be deferred, as the members are not present."

THE PRESIDENT: "Report of the Committee on Exhibitions. Prof. A. G. Gulley."

PROFESSOR GULLEY: "Mr. President and Gentlemen: The only exhibition we made last year of any importance was the

one at Middletown. There were a few samples shown at different meetings, but that was our show of the year. Those of you who were there don't need to be told about it, and those of you who were not there and did not see it do not deserve to be told about it. It is possible, however, that there are some who would have been there if they could. The secretary has already referred to it, but I can say this· that so far as any exhibition of fruits that I have seen since I came east of the Hudson river is concerned, it was far ahead of anything. Certainly those who saw this exhibit can be sure that Connecticut can produce good fruit, and we have some exhibitors to bring it out, and they are becoming better educated in that line right along. That exhibit showed that they are increasing very rapidly in knowledge of fruit. That is one thing which the fruit which has been produced in the last four years has shown. There has been not only more of it but it has been in very much better shape, and better named. That exhibition was certainly full of encouragement to fruit-growing in Connecticut.

"Now, aside from our exhibit, and that is about all that belongs directly to this Society, but some of you are aware that it has been supposed to look after the exhibit of the state at the Pan-American Exposition. That is the work of the State Board of Agriculture. This Society has not been called on for assistance in any shape except for fruit for that show. They have paid all the bills, and furnished the means for carrying out the work, although I have been appointed by this Society as its delegate to carry out this work. I began the work at the Middletown meeting and gathered up several barrels of fine fruit, which I took to my house and re-sorted, and then repacked and had it placed in cold storage. I have sent out a good many circulars asking for fruit for this exhibition, and altogether have received in response about twenty barrels of apples for this work. Those who have furnished this fruit are all, with a very few exceptions, members of this Society, and every man who in response to that circular agreed to send fruit has done so with one exception. I sent out about 150 circulars, and I had some dozen or fifteen responses that they could not do it. If the fruit which has been sent

to me goes through the winter in good condition, as I hope it will, we shall be able to put on at the opening of the show a good stock. Of course our exhibit is nothing like the 300 barrels that the Western New York Society have, but they went right into the market and bought. We did not do that. This fruit of ours was all contributed, so far as I know. The State Board of Agriculture has laid out a plan for exhibiting this summer, and we are in hopes, provided the Legislature will give us the money, to put on a show of fruit at the opening of the Exposition, and then keep an exhibit there right through until the show closes. It will mean a lot of work, and I hope to have the coöperation of the members of this Society. I shall be looking for fruits to put on there, and shall probably be calling on you by letter or in some other way for the specimens to put on. You are the ones that will have to furnish it. Along towards the last of the season it is my intention to visit some of the shows and solicit the whole exhibit that may be there; take out what I want, what I consider worth while, and send that on, and about the 1st of October I shall expect to be able to put on there about as handsome a show of apples and fruit of a general character as has ever been shown from Connecticut. We expect to beat our last year's exhibition by 50 per cent. We shall have instead of 800 plates, a thousand of them, and make a grand show. When our annual show is about over I shall move to confiscate the whole business, and ship it to Buffalo to finish up our show there with. That is the plan I have."

THE PRESIDENT: "I would like to ask if Professor Gulley intends to show any Connecticut peaches?"

PROFESSOR GULLEY: "Oh, yes. I referred to that in a general way. Through the peach season—yes, sir. And the same way with other fruits. From the 1st of August, and following it up through the season there is no reason why we should not be able to show all our fruits. My idea is we shall have to put on about three times a week from the 1st of June up to the 1st of August, anyhow. Then in August we shall have to handle peaches and plums. The fruits can be shipped from here by express and reach there the next day, and our stock will have to be replenished in that way right

straight along through the season. Later in the season, when we can get apples, we shall not have to change the exhibit so often. I am in hopes those other fruits, more perishable fruits, we shall be able to ship from here and have them reach Buffalo in good condition. There is no reason why we should not."

THE PRESIDENT: "The next is the report of the Committee on Injurious Insects, by Prof. W. E. Britton."

REPORT OF COMMITTEE ON INJURIOUS INSECTS

The Insect Committee for 1900 has few serious insect depredations to report to the Society at this meeting. This does not necessarily mean that such attacks were rare or unknown during the season, but rather that they were not reported to your committee by the members. The only new thing that is liable to assume the nature of a pest is the peach-leaf mite, and too little is known as yet about this organism to warrant any predictions in regard to its future behavior. We beg leave, therefore, to place before you a few notes regarding some of the old insects and the methods of destroying them.

LEAF-EATING INSECTS

The "apple-worm," i. e., the larva of the codling moth, *Carpocapsa pomonella*, L., was found inside an Abundance plum and feeding on it. The forest tent-caterpillar, *Clisiocampa disstria*, Hübu, was found feeding upon apple foliage at Wallingford. The Abbott sphinx, *Thyreus abbotii*, Swains, was received from Bridgeport, where the larva was devouring the foliage of the grape. A small brown beetle, *Anomala lucicola*, Fabr., was feeding upon grape leaves in Suffield; and another lighter-colored species, *Colaspis brunnea*, Fabr., had been injuring the foliage of the grape and strawberry at Mt. Carmel.

The caterpillar of the "gray plume moth," *Oxyptilus periscelidactylus*, Fitch, was received from Yalesville. This insect feeds in the unfolding leaves of the grape-vine, drawing them together with a web to form a nest. As it usually eats away the bud, the season's growth is arrested. In a small plantation the cater-

pillars may be crushed inside their nests, but this, as well as the other leaf-eating insects just mentioned, can be destroyed by spraying the vines with Paris green.

SCALE INSECTS

The San José scale, *Aspidiotus perniciosus*, Comst., must still be regarded as a first-class pest, and several newly infested localities have been discovered during the past year. Your committee has received this insect from ten different places. In spite of the fact that much published matter about this insect has been circulated and that much has been said about it in these meetings, several of our leading fruit-growers are only just awakening to the fact that it is breeding rapidly in their own orchards, and they are beginning to realize that it is a most undesirable inhabitant. This insect must be recognized as a permanent factor in fruit-growing, and every orchardist should be prepared to give his trees an annual treatment to destroy it. A spray of kerosene and water, containing 20 to 25 per cent of kerosene, applied in late winter or early spring before the buds open, with a pump made especially for the purpose, seems to be about the best treatment that can now be recommended. A 10 per cent mixture can be applied to hold the scale in check should it be discovered during the summer when the trees are in foliage.

Putnam's scale, *Aspidiotus ancylus*, Putn., was received from two localities during the year.

The scurfy bark-louse, *Chionaspis furfurus*, Fitch, has been received nine times, and the oyster-shell bark-louse, *Mytilaspis pomorum*, Bouché, once during the season. Both of these scales pass the winter in the egg stage, so that it is useless to attempt to destroy them by any ordinary spray applied during the winter. The eggs hatch during the latter part of May, and an application of soap and water the first week in June will destroy the young scales. The writer used a 10 per cent mixture of kerosene and water successfully against the oyster-shell bark-louse as late as June 23 on a tree of Kilmarnock willow which was badly infested: the insects were killed and the foliage uninjured.

PLANT-LICE

The pear psylla, *Psylla pyricola*, Först, was abundant and caused much injury. Mr. A. B. Plant sprayed some of his trees at Branford about June 10 with 10 and 15 per cent of kerosene mixed with water. Had the application been made about three weeks earlier it would probably have been much more effective. As it was, few of the insects were killed, and they damaged the trees as usual. Neither the 10 nor the 15 per cent mixture injured the foliage.

Mr. Plant also used the 15 per cent mixture against the purple aphis, *Aphis mali*, Koch, on young apple twigs. Both the new growth and the lice were destroyed. Shrubs of *Spiræa Van Houttei* and Japanese quince, *Cydonia Japonica*, were sprayed by the writer on June 23, with a 10 per cent mixture to kill plant-lice; the lice as well as the foliage remained uninjured. Dr. Sturgis used a 15 per cent mixture on Spiræa at his place, and killed the lice without injuring the foliage. The apple aphis, *Aphis mali*, Koch, was sent to your committee from Newington and New Haven.

THE PEACH-LEAF MITE

A peculiar metallic lead-colored appearance of the foliage of certain trees has been prevalent in many peach orchards of Connecticut during the past season. On examining these leaves with the microscope, the surface cells forming the epidermal layer appear as if their contents had been destroyed and contained bubbles of air. At first the trouble seemed like one of a purely physiological nature, which might have been caused perhaps by the protracted drought, as no evidence of parasites was discovered. But the same trouble occurred in the vicinity of Washington, D. C., where it is thought to be the work of a very small mite belonging to the genus Phytoptus. It is certain that the mites are found in connection with this peculiarity of the foliage, but it has not as yet been ascertained how the mite causes the injury, nor even established definitely that the mite is wholly responsible for the trouble, though such is thought to be the case. This mite does not form galls,

like a near relative, *Phytoptus pyri*, Scheuten, on pear foliage, nor does it eat away the surface like the common red spider. I have had no opportunity to observe the operations of the mites on the leaves and am not able to state whether they live inside or outside the tissues, though in many leaves sectioned and examined I could find no punctures through the surface layer. My attention was not called to the presence of the mites until late in the season after they had left the foliage to congregate on the twigs where they pass the winter underneath the bud-scales. Specimens were received from two localities, and the same species was found to be present on the Station grounds. This parasite will be a subject of investigation next season, and I should like to receive for examination peach twigs and leaves from fruit-growers in all parts of the state where the presence of this mite is suspected.

In conclusion, I wish to call your attention to the fact that this committee is always ready to identify insects and give information regarding their habits, injuries, and the treatment to be used in combating them. Sudden outbreaks may be investigated and emergency circulars issued if the circumstances warrant it. But the committee itself can do little and its reports will be of little value unless it has the coöperation of every member of this Society. This report should be an account of the injuries of fruit insects of the whole state for the season, yet it is impossible for your committee to cover the entire state, and therefore must depend to some extent upon the observations of members. It is hoped that the committee may receive more assistance along this line in future years. All of which is respectfully submitted,

W. E. Britton, *Chairman.*

The President: "Next is the report of the Committee on New Fruits. Mr. Edwin Hoyt, of New Canaan."

Mr. Hoyt: "Mr. President, I did not know until I had word from the secretary on Monday that I was the Committee on New Fruits. If I had I should have looked up the matter somewhat and been prepared to talk to you, but I will do the best I can under the circumstances.

"I do not know that any new fruits have come before us this past year that need much examination. There are some new apples that are being brought forward. The latest one that has come to the front is the Opalescent. That is a beautiful name. That is to be pushed by a company who are growing the trees very largely, and, judging from the circulars that they are sending out, it possesses all the qualities for a market apple. They claim it is a good winter apple, and a good money-maker. That, however, is not a new story for anybody who is interested in fruits. They are all that way. I asked a gentleman to send me some samples of the apples, and I brought one up so that you could see it. One value of it is that it is a late keeper. In the circulars which are sent out advertising this apple there are some strong testimonials from people who say that they have seen these apples exhibited in 1899 which were grown in 1897,—exhibited in February and March the second year after their growth. This apple comes from Illinois, and the people who have put this out have so much faith in the apple that they say they will present any person buying trees of them at their price with a written guarantee to take all the apples that those trees will grow until those trees are past twelve years old at $2.50 a barrel. If you want to make some money by selling your apples, there is your chance.

"Another apple has now put in an appearance called the 'North Star.' I do not know anything about it. I do not spend much time on these new circulars that come out. I hope by and by to tell something about the new varieties, for we have about seventy of them set out.

"I do not know that there have been any new plums brought out in the last year or two which deserve any particular notice or attention. If I wasn't a very modest kind of a man I would speak of the October Purple, because that is our plum, you know. My experience with it has made me feel that it is a valuable plum. This is the first year that ours have fruited, and we had some handsome specimens of fruit from three to three and a quarter inches in size, and it is the best flavored plum I have ever eaten. It is a splendid grower and makes a fine, handsome head. I think it better

than the Burbank, but we must test and try it before anything very positive can be said of it.

"There is one of our new fruits that it gives me a good deal of pleasure to speak about, and that is the Green Mountain grape. I see that some of the largest horticultural societies have put it at the head of the list. If I have to lose $4,000 or $5,000 in trying to introduce it, it is an important fact to know that the fruit-growers of western New York acknowledge it to be one of the best that has been brought out.

"Strawberries I don't know anything about. I think Brother Hale can give us more information about them than most anybody here. It is of very little consequence anyway, because the variety that will do the best with me, and that I would praise up, if set out on some of your places you would condemn. Almost every new kind depends upon the soil. If a new variety comes along that does well on your soil, plant it. If it does not, do not plant it. It would be very hard to tell what kind of strawberries would be the best for the farmers of Connecticut to set out.

"In relation to new peaches, we do not have any new varieties ourselves. I am well enough satisfied with the Connecticut, Heiley, Mountain Rose, the Crawford Early, and the Elberta. The Elberta, so far as our experience goes, caps the climax for profit, beauty of fruit, form and vigor of the tree, etc. I have not tried to introduce any new peach. There are some two or three, and there are some free-bearing peaches. I do not have so much faith in those as some, so we have never tried to introduce these ever-bearing peaches that so much has been said about. I have always believed that a thing in its day was best, and a peach that will bud all the time I should not like so well as one having its season, giving you a full crop, and getting out the way. There are some varieties, of course, that you may ask me about, and that have their friends, but with us it is our aim to keep down varieties. We have about fifty now, and if you are growing trees you will quickly find out what a trouble it is to grow that number of varieties, and grow, as we do, 120,000 of a kind."

A MEMBER: "I would like to ask Mr. Hoyt if he thinks early peaches are the best for commercial purposes?"

MR. HOYT: "Early peaches, so far as my experience goes, I do not think are profitable for commercial purposes. They rot; most of the early varieties rot."

MR. ROGERS: "I would like to ask if he knows anything about the Emma or Elberta?"

MR. HOYT: "The Elberta I referred to as one of the best. The other I have never heard of."

A MEMBER: "I would like to ask Mr. Hoyt what he thinks of the Early Rivers. We have found it to be a very early white peach, and with us it has not rotted."

MR. HOYT: "The Early Rivers will be, I think, as good as any we have. Of course, there is some distinction between the various early varieties. Some do not appear to rot as badly as others, but that is the great trouble with most of these early varieties."

MR. MILLER: "How about the Triumph?"

MR. HOYT: "That is an early peach, but I think it is like most of these early varieties; it has that objection."

MR. MILLER: "Have you had any experience with the Foster?"

MR. HOYT: "The Foster peach is a good peach. It comes into condition about the right time, but there is no better than the Crawford Early. The Crawford comes in at about the same time. It is a little earlier if anything. The Foster is a very yellow peach, and is very attractive in the basket."

MR. ROGERS: "Don't you consider the Foster better than the Crawford?"

MR. HOYT: "No, sir."

MR. ROGERS: "Up in our section it is considered far superior."

THE PRESIDENT: "Do you know anything about the Connecticut?"

MR. HOYT: "Nothing about its quality of bearing to any extent as yet. We have it growing. We have included the Champion peach this year and are very much pleased with it. It is a splendid large white peach with a little blush. It bears well, and the peaches are of very large size, very attractive and very salable. I do not know as we have the right kind, but what we have got have done very fairly."

THE PRESIDENT: "The Champion peach has done well for me. I have been pulling out some old trees that have done good service. It is an old peach."

THE PRESIDENT: "If Mr. N. S. Platt, the state pomologist, is in the room, we would like to have his opinion about some of these new fruits."

MR. N. S. PLATT: "Mr. Chairman, I have not had a chance to watch new fruits except in peaches. I have had the Triumph, Greensboro and Waddell, and also one or two others. The Triumph is a good bearer, a bright-looking peach with red cheeks, but is rather watery. It is very early; perhaps about the 30th of July, or somewhere about there. I should not think it would be good for anything for market.

"The Greensboro is about the same looking, white with red cheeks, and of good size. It is large enough, and fine-looking enough for market. It has not rotted, so far as I can see, on my own trees. It ripens about the 25th to 28th of July. Its keeping qualities are probably not great, and I suppose it will rot like all early peaches in our climate do. It looks very well, and aside from that trouble I should think it would be a good market peach. It is the best early peach, so far as I have seen, for family use. It is certainly ahead of the old Waterloo and that class of peaches. The Triumph with me rotted. It looked pretty and handsome, but rotted. As to the Waddell, and one or two others, I have not had a chance to see which was the earliest, but they were of good size, and large enough for market. They ripen rapidly, are quite large, and perhaps will be desirable for market peaches. I have a later white one that I am sure if it behaves as well hereafter as it has done it will be worth while as a market peach. It is as large or larger, is evidently a better bearer and as good-looking a peach as the Stump, and would be about ready to pass into the market when the Stump has passed.

"The Japan Blood I had for an early peach, but that is determined to rot, and is worth nothing at all as a market peach. It is one of the early ones."

MR. IVES: "Some one asked about the Emma peach before you came in. You know something about that?"

MR. PLATT: "I have four or five trees three years old. I

think there has been an occasional peach on them, right among the Elberta. It is a peach that is a week or ten days later than the Elberta, greener, and not as desirable so far as I have observed it. I do not think it is as good a bearer as the Elberta, but only having had about a half-dozen peaches I am not able to say much about it."

A MEMBER: "I would like to ask about the Waddell; if that is a peach that is grown as a market peach?"

MR. PLATT: "If it could be grown in large quantities I don't know but it might be if marketed quickly. I have only had one crop on two trees. It is large enough, and a good bearer, and hangs on the tree all right."

A MEMBER: "It is large enough, but isn't it a little tender, and a little off for shape?"

MR. PLATT: "I don't know as to that. I am speaking simply as I have seen it. It would be pretty hard to tell from one crop whether it was a peach you want or not."

Mr. Sternberg, reporting for the Auditing Committee, stated that the committee had examined the accounts of the treasurer and found same correct, and on motion duly passed, the report was accepted.

THE PRESIDENT: "We have with us Brother Hale, the "Peach King," who is ready to report for the Committee on Markets and Transportation. I think he ought to know something about transportation. He has been transported to Georgia often enough."

MR. J. H. HALE: "Mr. President, and Brothers and Sisters of the Connecticut Pomological Society: When I was appointed Committee on Markets and Transportation at the last session, and they finally got me as chairman of it, I started out, in a general way, to see what might be done in working the matter up, and made a little progress, but as it came a little further towards spring I commenced to realize that my duties in connection with the picking and getting to market of 225 car-loads of peaches in Georgia, and fifty more in Connecticut, would give me about all the business on my own hands that I could attend to, and so I notified the next member on that committee that I would not be able to do any work on that committee because I should be out of the state; but two good

frosts came along in May, and they settled the question of the transportation of last year's fruit crop in Connecticut; there was no trouble in taking care of it. That is about where the matter rests now. Nothing, practically, was done. I do believe, however, that there is, and will be an opportunity for associate work in this state in successfully marketing our fruit products, but we have got one very serious interference; and that is, our splendid local markets tempt every one of us to plan to sell all we can at home, and not bother about what the other fellow will ship away. We are going to take advantage of what we have got, and then if anybody gets tripped up in trying to ship away it will be the other fellow. That fact constantly tempts us away from any plan of coöperative work. I am convinced, and I think Mr. Evans, who was chairman of a committee that I talked with at a meeting of the State Grange, is convinced that the local conditions are such that all of us want local sales more than we want coöperative work. There is no question that there will be an advantage to us in extending our markets, but if that is done it will have to be done by localities, not through or by one general committee, but from centers. For instance, from a center like Hartford, and from another center like Middletown, and another perhaps at Wallingford, and again at Milford, and so on at the various points in the state where fruit is grown in quantities. It seemed to me, and at the same time it appeared to Mr. Evans, that it was a matter for local committees to manage. If you have a local committee, or a local organization, and then in addition to that you have a central organization, it will be about the best thing of the kind you can get. There was an attempt made in Delaware this present year from which we can learn a useful lesson. For ten years they had the Delaware Peach Exchange, which attempted to handle their peaches, and it did it successfully in one way, and very unsuccessfully in another. This season they had a coöperative effort in distribution of the crop, while the central organization aimed to set the standard of grading, picking, etc., and furnished a general label with the number of each grower. And, of course, if he could keep up to the standard, his number told in the market who he was and where he was, and in that way the grower got the benefit of it. We might do something

of that kind here in our state. No plans were laid out by the committee, however, and we did not meet the issue, because the frost met us before. We have not yet struck the flood-tide of prosperity in Connecticut. Our markets here have kept pace marvelously with our production, but adversity will surely come some day unless we are prepared for it. I fear until we have a little of it it will be hard to make our people do much. It is hard to make people do anything unless they have to, and until we have gone through one year of real thorough mix-up and disaster I fear we shall not come together as we ought. If we could come together through local association and united effort it would undoubtedly be of great benefit. When that is done, the very first question that will confront us will be the question of money. How much money will you put in? There is no use in putting a man's name on the list, and there is no use in making a move in any way at all until you know how much capital each man will put into the work, because in looking up markets, and in attending to various matters that will have to be taken care of, somebody has got to be paid. Associated efforts of this kind have failed, and always will fail, I don't care where they are, because some man has done the work, and then when they passed around the hat those that were benefited did not chip in. If we are going to do anything of this sort in Connecticut, let us raise the money first and then do the work afterwards." (Applause.)

THE PRESIDENT: "We have a man with us who is not the king of the peach business, but who is king of gardeners in Connecticut, and he will give us 'the outlook for the small fruit grower.' Mr. A. N. Farnham, of New Haven."

THE OUTLOOK FOR SMALL FRUIT GROWERS

MR. FARNHAM: "When I received the program on Saturday of last week I found that our worthy secretary had placed me upon it for a speech on 'The Outlook for Small-Fruit Growers.' This was news to me, for I took it from his letter that he wanted me to say something not only about the growing of small fruits, but to make some observations on the past season in the same general way, and as I prepared my

paper previous to receiving the program, I shall have but little to say upon the subject as announced.

"Much I may say to-day is only what is well known by the experienced grower; but there may be those present who have not had much experience, and to those I may possibly say something which will be to their advantage. At least it may give them a new thought, or cause them to study into the matter, and see whether it be so or not, and so lead them to experiment for themselves as most of us have had to do.

"A writer has said: 'Small fruits to people who live in the country are like Heaven; objects of universal desire and very general neglect.' I have often noticed and wondered why people living in the country failed to raise a good and abundant supply of small fruits. You may visit farmer after farmer right here in Connecticut, and you will only find an occasional one who grows a good liberal supply of small fruits; enough so that his family can have all they want of the most healthful things we have to eat, and even if he goes to the expense of planting he often suffers them to be choked with weeds, or run out by grass. What a blessing and comfort they are withholding from themselves and family! Especially would the children enjoy these things. But, although the matter is neglected by some, I think perhaps there are now more people who are interested in and derive more pleasure from the growing of small fruits than the growing of anything else, unless it be flowers. The person who has only a city lot, as well as the one who has acres, generally grows something in the small fruit line. The man who works in the shop or store, and has just a little time to spare night and morning, often delights in growing either strawberries, blackberries, raspberries, currants or grapes, or perhaps some of each, thus being able to gather from his own garden perfectly fresh fruit each day rather than having to eat fruit that may have been picked for days and lost much of its flavor, and at the same time generally getting it at much less cost, quality considered. But most of us who are here to-day, while we profit in the same way as just described, grow them for the money profit to be obtained in order to help gain a livelihood.

"The season of 1900 will probably be remembered by most

small fruit growers for some time to come. We were confronted in the early spring, just as strawberries were coming into blossom, with a frost which, although it proved not to be very destructive in most localities, caused us considerable alarm as well as quite a little expense. I, for one, went to a large outlay in covering several acres; but those that were not covered came out better than expected, as the atmosphere was so unusually dry scarcely any dew formed, although it was cold enough to crust the ground. We still continued to cover the second day, as the local weather station predicted another cold night, and all appearances indicated the same, but we were happily mistaken, as it warmed up during the night. This is one of the unpleasant features in small fruit growing, but one we all have to face every few seasons in common with all tillers of the soil.

"The subject of frost carries me back several years to an experience that may be of benefit to some. Several years ago I had a field of strawberries in form nearly square, containing some three or four acres. The indications were that there would be a hard frost, and it proved to be so, ruining most of the crop. Towards night we hastily prepared to try and ward off the frost by building fires on the two sides of the field from which we thought the wind would carry the smoke across the patch. We lighted the fires in the evening, keeping them going until we found it to be useless, as the vines were stiff from frost. I think it was two years later when it looked like frost again, and we talked it over and concluded to try fires on all four sides of the field, which was situated about as the other field was, except that it contained nearly twice the amount of ground. We carted stumps, and brush, and a lot of old tar roofing paper, also getting a good supply of coal-tar and kerosene, designing to make a thorough job of it. We lighted the fires, of which there were twenty-six in number, about 10 P. M., and after a time we tried to make more of a smudge in order to produce more dense smoke by using salt hay and coarse stable manure, and we did make it roll off in great black clouds; but all to no purpose so far as the frost was concerned. The smoke rapidly passed upward, it being comparatively still, as most frosty nights are. After so thorough a trial I decided that fires were useless as well as quite expensive, as aside from the expense of the

material it took quite a force of men to keep the fires from burning too briskly, and so as to keep them making plenty of smoke. I would rather depend on covering in some way.

"Returning to 1900, very soon after the cold snap we found ourselves at the beginning of one of the most severe and protracted droughts that many of us ever experienced. It was only the pieces that were on naturally moist ground, or where artificial watering could be applied, that yielded much of a crop, although good cultivation and keeping the ground in good condition was of very great benefit. The outlook for strawberries was good, but extreme drought began to tell on them after the first pickings, and quickly cut them short, drying many of them up on the vines. In fact, this was the case with all kinds of berries to a more or less extent. Blackberries, in some places, suffered even worse, completely drying up before picking commenced. I saw a patch owned by an experienced and generally successful grower, and upon good ground, and yet they were an entire failure. In this case the good care was not sufficient to save them. He would have had a wonderful crop in an ordinary season, as the vines were loaded. I had a very fair crop as it was, the berries being grown upon a northerly slope, on a medium and gravelly soil. Raspberries suffered about the same as strawberries, some pieces giving a partial crop, while others were ruined. I knew of some fields that gave light pickings, while a few did quite well. I am sure with both blackberries and raspberries good cultivation had very much to do with the returns. I saw some fields of late strawberries that did well, but they were upon good moist ground and had the best of care, but I think these crops were the exception rather than the rule. We had given our berries of all kinds good care, and our strawberries were well mulched, but in mid-season we found the drought had cut our crop short about one-half.

"I read of a grower who cultivated his strawberries right through the whole of the picking season with good success. I should hardly have thought that the best way, as it would seem that the fruit must certainly be more or less dirty from the dust that surely would arise. I think I would rather depend upon a mulch to help retain the moisture. It would seem to me that constant cultivation all through could be

practiced to more advantage in blackberries, raspberries and currants, but there are those who say, 'Never cultivate raspberries in a dry time.'

"Strawberries will grow upon almost any soil, but a good, deep, sandy loam is most desirable. I think you will get the largest specimens on quite heavy soil, but not the largest profit, taking everything into consideration one year with another. New land, as soon as well broken, is desirable for berries, as they will invariably do well, and also there is the big advantage to be gained, especially when you intend to take several pickings from them, of being able to keep them clean with much less expense. Ground that has been plowed and cropped is preferable to sod ground. A few years ago, before we had such fine facilities for refrigeration and rapid transit, so that the berries from all parts of the South could be put into our markets in such fine condition, the person growing the earliest berries could generally make more than those growing later ones, and for that purpose one needed a warm and light soil. You would perhaps get smaller berries, but the price more than made up the difference. Now, however, we gain much less advantage, as the berries from the South begin to arrive so early in the season, and so continuing from points a little further north that the market is kept full up to, and at the time of our ripening season, and from the fact of their having been in the market for so long a time the people do not as eagerly grasp for the home-grown article unless we make the price nearly as low as that of the fruit shipped in.

"There are differences in opinion as to how long a strawberry bed shall be run. I presume the largest number of growers practice taking two pickings, but many advocate only one, while some say three or four. I have known some to say as high as nine. I think existing circumstances in each individual case the best guide to decide this matter for the grower. If he finds his bed infested with any of the varieties of weeds which are hard to conquer, he had better plow it under rather than to continue to try and run it, but if it is upon ground that he has little trouble in keeping clean, and if the vines look thrifty, it will do to run it as long as he can see a good outlook for its doing well. One of the most profitable

beds I ever grew I kept a portion of six years. For real profit I think it should have been plowed under the year before, but for pleasure in the experiment I continued a part the last year. I have often kept a bed an extra season, taking off simply what I could get because I did not want the ground to use early and did want it later in the season. Being engaged in the market-gardening business, in this respect, of course, I would be differently situated from many. One advantage in only taking one crop is lessening the chance of loss from insect pests. I had the root-worm a few years ago, but plowed the infested fields under, and got rid of it entirely.

"There are different methods of growing, the most common and generally accepted plan being the narrow matted row. This plan affords the easiest method in taking care of them, especially those from which you calculate to take two or three pickings, and it also commends itself in picking, as careless pickers will not be as liable to step upon the berries as in the wide row, where the picker has to reach much further.

"As to varieties, there are so many good ones that it would not be an easy task to advise except in a general way. If one is going to ship his product to some distant market he needs to select a fairly firm berry, while for a near-by market one need not select especially for firmness. While quality is an essential, still the wholesale grower need not be so particular as the one who grows to sell directly to the consumer, or even some very particular marketman. If he wants berries from early to late, of course the grower must plant those varieties that will give him such a succession. A grower should certainly select a kind that will do well upon his own soil. This can best be ascertained by trial and experiment. There are some varieties that will do well upon almost any soil, while others need a very heavy and moist soil, or one just adapted to them, notably the Parker Earle. I have seen few good crops in this section. We read of some phenomenal crops produced by this variety, while the old 'Crescent,' or one of its type, would produce a fair crop anywhere. We find the imperfect berry is generally the most productive. Many dislike to be compelled to plant different kinds, and do not always know what kinds to use to fertilize with, and it is somewhat bothersome in picking to keep

the fruit separate. Unless the varieties look somewhat alike they do not look as well in the same basket.

"The question is often asked, 'What is the best berry to fertilize with?' There are numerous good ones, but to get the best results one needs to use a kind that will blossom at the same time as the ones he desires to fertilize. He also needs to look out, and get those which produce an abundance of pollen. There are those who say that if you desire a firm berry you must use a firm berry to fertilize with. I find opinions differ in regard to this.

"The covering of berries during the winter has become the general custom. Many advocate covering before frost sets in. I generally wait until the ground has frozen so that we can drive over the field. My ground does not throw the plants out to any extent, as it is mostly a sandy loam.

"Now, as we ask, 'What is the future outlook' for small fruits we must consider the market demands and conditions as we find them at the present time. The strawberry, of course, is the one most extensively grown of any of the small fruits, and owing to the fact of this most sought-for and luscious fruit bearing transportation well, it is sent into all sections, and, as I have stated, it comes to us very early from the South, before our own ripen, and we, in turn, send ours further north in like manner. All sections where it can be grown to any advantage are growing more than formerly, thus only leaving the market open for outsiders before theirs ripen. The rapid transportation of to-day allows them to be sent such long distances we all suffer in the greater competition thus afforded.

"Raspberries have sold at medium prices for several seasons. Through winter-killing, and oftentimes the breaking of the vines from snow, the profits are kept rather short. Then again, when heavy rains occur during the picking season it causes more of a loss than with any other of the small fruits. We consider there is but little money in them until better prices can be obtained.

"Blackberries have sold fairly well, but not generally at prices that will give profit enough to cause them to be planted very extensively. Many are trying the dewberry, and we see them advertised as the best paying of the blackberries. That

is a question. There probably is more work entailed in growing the dewberry.

"Gooseberries seem to be a fruit for which there is little demand. A few can be sold green, while there is a limited call for them for canning, but I have never seen a season with any large demand. It has always seemed strange to me that people did not use them more extensively, especially for canning purposes. I think they would pay fairly well if a market could be found for them.

"I am afraid currants can seldom be made to pay any great profit. They have been very low in this section for several years, and the sale has been rather dull even at the low prices. One of the causes of this has been the placing upon the market of so many gelatines and jellies that take the place of the real jelly, of which more was formerly made from fruits. This also affects other fruits, but probably not to such an extent as the currant.

"Grapes are another small fruit of which considerable quantities can be sold, but the price is altogether too low to offer any great inducement to plant, unless for some purpose other than selling for eating.

"There has been a large increase in the planting of small fruits in the last few years. As far as I have been able to learn, as much was set last year as usual, and in many localities even more. I have noticed that many nurserymen have reported for the last year the largest sales ever made. This would go to prove more extensive planting. I have also noticed that a great many who have been growing fruit more or less send out cards or small catalogues, stating they have small fruit plants for sale, and what they would naturally sell added to the sales of the established firms would prove conclusively that the acreage of small fruits must have been increased to a large extent. The widespread drought had a very serious effect upon the newly planted fields, as the growth was naturally checked, and many died outright. This will undoubtedly somewhat curtail the crop of fruit for the coming season, and may be a benefit generally. It certainly must be if there was an over-planting, as many think was the case, but I can see nothing else to cause any great change either

one way or the other. We know the demand for and consumption of small fruits has greatly increased, but has it fully kept pace with the rapid and wide increase in production? Opinions seem to vary in regard to this. Small fruits have for several years been sold as cheaply as they could be produced at any profit. I think perhaps for the last six years prices have averaged less than at any great length of time previous, although there have been years all along when prices would run down pretty low. We need not expect much of a change, as, if we have a short crop locally or anything causes a good demand or an increase in price, inside of a few hours it is flashed over the telegraph or told over the telephone, which has so completely put one place in connection with another, that the market is soon supplied, thus keeping the price from rising very much.

"I don't know that we can grow our fruit much if any cheaper to-day than for the last twenty years. Labor costs just about the same, and we pay just the same price for picking. Crates and baskets are quite a little cheaper, which is about the only perceptible difference.

"The grower of all fruits must strive to grow the best, as with the market well filled it is much easier to sell a good article than an inferior one, and there is a great deal more pleasure in it, as well as often a better price. The time is here when it is imperative to try and grow the very best of everything that we grow upon the farm. This has always been the best plan, but to-day we are without choice if we are going to succeed and make any money. We must do this; selecting only the best varieties, giving all crops the best of care and fertilization, and by so doing, doubt not you will find the balance on the right side of the ledger."

THE PRESIDENT: "If there are any questions to ask Mr. Farnham, they had better come up at this time, as that completes the small fruit papers."

DR. SMITH: "I would like to ask Mr. Farnham how he fertilizes for two or three years for strawberries?"

MR. FARNHAM: "I use some commercial fertilizer, but almost always use, to a certain extent, stable manure, particularly on certain kinds of ground. I do not use that so much

on ground where it would be too heavy, but on suitable ground stable manure is about right. I find it more universally used to-day than ever. Commercial fertilizers are all right when rightly used. Opinions differ somewhat about them. Some say use them in the spring to start the crop, but I think that most of us have come to the opinion in growing our garden crops that it is a good thing to use both times,—when you are starting the crop and along through the season as required. If it is a good thing to give plants for breakfast, it ought to be good for dinner and supper."

THE PRESIDENT: "What are best six strawberries to plant for market?"

MR. FARNHAM: "I should not consider myself competent to answer that question. The Bubach is good for a near-by market. I think we have got to look quite a little while before we surpass that. The Haverland is good, and the Glen Mary, and of the newer ones they are talking about, the Excelsior and Johnson's Early. I have had some of those set this last year, but I cannot say much about them. You can select from a dozen different varieties, and it would be very hard to say between the Saunders, the Tennessee, the William Belt, Wolverton and Brandywine. The Bismarck is also a good berry. When it comes down to the late ones, you have got to get down to two or three varieties."

THE PRESIDENT: "We will now listen to Dr. W. C. Sturgis, of New Haven, who will give us the report on 'Fungous Diseases' if he is ready."

REPORT OF THE COMMITTEE ON FUNGOUS DISEASES

Your committee, appointed for the purpose, begs to present the following report on the fungous diseases observed in the orchards, vineyards and small-fruit plantations of the state, during the past season.

ORCHARD FRUITS

Apples.—The principal diseases affecting apples in Connecticut are the scab (*Fusicladium dendriticum*), the sooty spot (*Phyllachora pomigena?*) and the brown speck of Baldwins, the

cause of which is as yet unknown. The dry weather during the past season was instrumental in holding in check both the scab and the sooty spot. Both of these diseases were less prevalent than usual and, in orchards which are thoroughly and consistently sprayed, the damage caused by them was almost inappreciable.

Your committee desires to call to the attention of orchardists a bark disease of apples, formerly attributed to the effects of the sun or of cold, but recently found to be caused by the growth of a specific fungus (*Sphæropsis Malorum*), and very fitly named "canker." This is the same fungus which attacks the fruit, producing a well-known brown rot. The tree itself, when attacked, usually exhibits on the trunk or larger branches slightly swollen areas, the bark of which is dark colored, rough and cracked, sometimes so much so as to expose the wood. As distinguished from the effects of sun-scald, the bark affected with canker usually clings tightly to the decaying wood. This trouble has occurred in abundance on the grounds of the Experiment Station, and specimens have been sent in from neighboring towns. It bids fair to become one of the most serious pests in apple orchards which do not receive the very best treatment in the way of feeding, tillage, pruning and spraying.

Your committee earnestly requests information concerning the presence of canker in the apple orchards of the state.

Cherries.—The fungus (*Monilia cinerea*), which is usually responsible for serious injury to cherries by its attacks upon both the fruit and the twigs, was not as prevalent as usual this year.

A leaf-curl of the cherry, caused by the fungus *Exoascus Cerasi*, has been observed, but is as yet rare and confined to one or two localities.

The black knot (*Plowrightia morbosa*) is, of course, abundant wherever it is allowed to remain unchecked. Under such circumstances, it becomes a constant menace to the profits of careful orchardists who, at present, have no means of protection against their neighbors' carelessness and negligence.

Peaches.—The mold (*Monilia fructigena*) and the scab (*Cladosporium carpophilum*) did somewhat less damage than usual during the past season. This was due, in a measure, to

the dry weather. Nevertheless, in the orchards examined, the loss of perfect fruit from these two causes averaged from 5 to 20 per cent, or more. As usual, fruit grown on low, damp ground suffered the most. So far as the Monilia is concerned, it appeared to attack the twigs with unusual severity. This is a more serious phase of the trouble than when the fungus is confined to the fruit, since it involves great labor to remove and destroy all the affected twigs, and if the latter are allowed to remain on the trees, they become a fruitful source of infection the following spring.

The experience of the past season indicates that strong Bordeaux mixture can be applied to peach trees before the flowers open, and that, for later applications, a mixture containing not more than two pounds of copper sulphate and double the quantity of lime, to fifty gallons of water, may be used. During the ripening period, a solution of potassium sulphide may prove serviceable, though this has not yet been demonstrated.

Pears.—The fire-blight (*Bacillus amylovorus*), unquestionably the most destructive disease which pear-growers especially have had to combat, seems to be gradually succumbing to judicious treatment. The removal and burning of affected twigs, as soon as the first symptoms of the disease appear, and, in particular, the prosecution of this work during the winter, have resulted in the practical eradication of the disease from orchards which a few years ago were in a fair way of being ruined by it.

Plums.—The fruit-mold (*Monilia fructigena*) was very destructive, owing to a period of damp, muggy weather while the fruit was ripening. Experience in many sections of the country has shown that, by repeated applications of Bordeaux mixture, followed by the ammonia solution of copper carbonate during the ripening period, plums of the European and Domestica types can be fairly well protected from the inroads of this fungus, and that without injury to the foliage. This is not true of the Japanese varieties, the foliage of which is even more susceptible to injury from fungicides containing copper than is the foliage of peach trees. In such cases, a winter treatment with strong Bordeaux mixture, the avoidance, by pruning, of dense masses of foliage, judicious thinning of the fruit and the

immediate gathering and destruction of fruit showing any sign of the mold, must be relied upon to reduce the trouble to a minimum.

The black knot (*Plowrightia morbosa*). As in the case of cherries, growers of plums for profit have finally succeeded in rendering this once-dreaded disease a practically negligible factor in the plum orchard. There are two seasons of the year at which the black-knot fungus matures spores capable of spreading the fungus. One is in January, the other in May or June. In November and December the fungus is inactive; the summer spores have disappeared, the winter spores are not yet ripe. This, then, is the season for destroying the knots. They should be removed by cutting off the twig or branch bearing them (cutting at least three inches below the knot), and these cuttings should be burned. If they occur on the large limbs or upon the body of the tree, they can be sliced off. In any case, the cut surface should be covered with paint or grafting-wax. It has been demonstrated over and over again that the black-knot is readily controlled in this way, but, of course, there is always danger of reinfection from neighboring orchards or from wild hedgerows, so long as the force of public opinion is not sufficiently aroused to compel owners of orchards and waste ground to destroy this pest. It occurs upon all native species of plums and cherries, both wild and cultivated.

Quinces.—The growing of quinces on a commercial scale appears to be waning in Connecticut. Very few new orchards are being developed and the older ones are being allowed to decline.

The principal disease which we have noted on quince trees is the familiar leaf-spot (*Entomosporium maculatum*). This was the first disease selected in this state to illustrate the value of fungicides, and it has been a standard and brilliant illustration of this fact for many years. It would be difficult to name a plant disease which is, at the same time, so destructive to the tree attacked and so easily controlled.

Another fungus which has been sent in to us with increasing frequency by quince-growers is the rust (*Ræstelia aurantiaca*), which attacks the young fruit and the twigs, dwarfing the former and producing on the latter peculiar, knot-like

swellings, covered with pustules filled with orange spores. Cutting off and burning the diseased parts is the only known remedy for this trouble. The winter stage of the fungus occurs on cedar trees and junipers, in the form of the familiar "cedar-apples," so called. The destruction of neighboring cedars should, therefore, be a prominent feature in the care of orchards, whether of apples or quinces.

SMALL FRUITS

Blackberries.—During the past season, as always, the anthracnose (*Glœosporium Venetum*) has been widespread and severe. In some instances, cutting out and burning the old canes at the close of one season, followed by thorough spraying during the next, has produced very gratifying results. On the whole, however, when once a plantation has become seriously diseased, the best practice is to destroy it, root and branch, by fire, and start a new plantation elsewhere, using the utmost care to avoid diseased stock. The thorough use of Bordeaux will, unquestionably, very much prolong the productive life of a plantation which, in the beginning, is free from disease.

Raspberries.—The same remarks regarding the prevalence of anthracnose on blackberries apply to raspberries. We desire to call special attention to two diseases of raspberries which appeared with great severity during the past season, practically ruining the crop in certain localities. The first attacks the fruiting canes and its effects are seen in a sudden wilting of the leaves, accompanied by a blighting and shriveling of the young fruit. Sometimes only a single cane in a stool is affected, but more often the whole stool becomes involved and the canes eventually die back completely. The cause of the trouble is very obscure. Although the symptoms above ground sometimes accompany the presence of crown-gall and root-knot below ground, this is not always the case. No fungus has been found constantly associated with the disease and, at present, we can only wait for the work of another season to throw further light upon the trouble, and meanwhile recommend the destruction of diseased plants.

The second disease affects the canes and is seen in the form of warty masses of whitish tissue of a spongy or cheesy consistency, which burst through the bark, detaching the latter in long strips. It is a most striking and unmistakable disease. Practically, nothing can at present be said regarding the cause of this trouble, except that the character of the diseased tissue resembles that of the crown-gall of raspberries and peaches, and that all three diseases may be caused by one and the same parasite. No method of treatment can be recommended, unless it be the heroic one of destroying affected plants. Meantime, we shall await with interest further information regarding the prevalence of this disease, on the part of those interested in small fruits.

Strawberries.—Practically, the only serious fungous disease affecting strawberries in this state is the leaf-spot (*Sphærella Fragariæ*), commonly, but erroneously, called "rust." As to its comparative prevalence during the past season, we are unable to speak from personal observation, and we have received no reports bearing on the subject from growers. It is safe to say, however, that it has gradually been decreasing in virulence, owing partly to the growing practice of burning over the beds in the autumn, partly to the use of Bordeaux mixture, and, in a high degree, to the production and selection of resistant varieties.

VINES

Grapes.—It is most satisfactory and encouraging to note the fact that whereas a few years ago the anthracnose, *Sphaceloma*, the downy and powdery mildews, *Plasmopara* and *Uncinula*, and, above all, the dreaded black rot, *Læstadia*, rendered the profits of the vineyardist extremely precarious, the universal use of Bordeaux mixture or other fungicides has enabled him to count with certainty upon healthy and abundant crops. Your committee has received no reports relative to the diseases above mentioned, and it is reasonable to hope that the time is coming when it will be unnecessary to include in our annual reports any reference to the fungous diseases of grapes.

In concluding its report, your committee desires to record

again its conviction that, without more coöperation than at present exists between its members and the members at large of the Society, the possible usefulness of the committee is seriously impaired. The appointment, by this Society, of a special Committee on Fungous Diseases, and the fact that it demands periodical reports from that committee, give some evidence that the fruit-growers of Connecticut are alive to the importance of the practical study of such diseases. Yet the evidence of any interest in the subject, on the part of the individual members of the Society, amounts almost to nothing.

During the past season we have received not a single report or communication concerning the prevalence of any well-known fungous disease, or the means which have proved successful in combating it, while we have received no more than a "baker's dozen" of inquiries concerning diseased plants, accompanied by specimens. The question, therefore, arises, whether your Committee on Fungous Diseases was appointed merely because it has become the fashion among pomological societies to have such a standing committee on its letterhead, or whether it owes its appointment to a desire on the part of the members of the Society to turn it to some practical use. If the former view is correct, then your committee would respectfully suggest that it be dismissed without delay. If, however, the Society desires to encourage the investigation of diseases which annually reduce the profits on fruit crops in a very considerable degree, the committee stands ready to render every assistance in its power, by receiving specimens of diseased plants and submitting them to experts in such matters; by determining, as far as possible, the specific cause of disease and suggesting remedies; by visiting orchards; by responding to inquiries concerning spraying apparatus and the use of fungicides; by conducting coöperative experiments; by receiving and collecting data relative to the prevalence and spread of fungous diseases; and by doing all it can to assist the members of the Society in their efforts to produce fruit of the highest quality, and thus to add materially to the value of membership in the Society.

If your committee is continued on the basis of coöperation, and only on that basis, it is prepared to take steps which, in the opinion of its members, will in future make its work of practical

value to every member of the Society. To this end, we bespeak the active assistance, in the ways above outlined, of every member of the Society.

Respectfully submitted,

W. C. STURGIS, *Chairman*,
G. S. BUTLER,
A. B. PLANT.

A MEMBER: "What time do you recommend spraying for raspberries?"

DR. STURGIS: "Just as soon as the leaves come out."

The morning session was closed at this point and a recess taken to 1.30 P. M.

AFTERNOON SESSION — FIRST DAY

The Society was called to order at 1.45 P. M., President Merriman in the Chair.

THE PRESIDENT: "For a few moments I will start the question list. No. 1 reads, 'What, and how many varieties, would you plant in a commercial apple orchard of 500 trees?'"

MR. HALE: "If that applies to Connecticut I should say not more than three or four kinds of red winter apples. I should probably plant more Baldwins than anything else, but be sure and know what it is that you do plant. Probably some Sutton Beauties and a few Rome Beauties. If we knew as much now as we will ten years from now we probably would n't plant any Baldwins at all, but the trouble is we don't know, so it is best to be on the safe side and plant something that we know something about."

PROFESSOR GULLEY: "That is one of the questions that was brought up at the New York Society. I think there are one or two apples that they referred to there that we do not talk much about, the Jonathan and the Rome Beauty. I do not know as to the Jonathan why it should not be good to plant here. I can't see why that is not as good for a red winter apple as some of these other varieties that we hear more about. We are getting every day or two that very question: what to plant for a winter apple. I have prepared

a list of what to plant for winter apples, but unfortunately I left it at home. It does not seem to me that we should make our list any wider than we do now as to varieties,— not more than three or four for winter apples. I think we have varieties that are better than Baldwin, and I should like to hear some expression of opinion on that."

MR. MOORE: "What is there that is better than the Baldwin?"

A MEMBER: "The Sutton Beauty."

PROFESSOR GULLEY: "No doubt that is one of them, and I believe the Jonathan is going to be one of them, too. I am not sure but the Rome Beauty will be one. This year the Sutton has not kept well; it is all right otherwise. The Sutton is just as good to eat in October as it is to-day. The Jonathan is going to be a good one, and the Wagener is going to be a good one. I saw some samples of magnificent Wagener apples, the only ones I have seen in the state. It is a good grower, and a good apple in many respects. It ought to be tested by our growers to see what it will do. I suppose there are others that could be brought in if we went to work to see if we could find some more varieties than we have. I think a little work and careful watching would bring out some first-class new apples well adapted to this climate. I think there are men right here in this audience who have got varieties on their own lands that they know are good, but it may be that they are not just the apples that are adapted to New England, and it may be that they are. I don't know. I wish they would speak out and tell us what they have got, and give us the benefit of their experiences."

MR. HALE: "In answer to the question of Professor Gulley as to the Western New York Horticultural Society, I want to say that there was a long discussion there about the varieties of winter apples, and more was said in favor of the Rome Beauty than any other one red apple. It is of very fine form and very uniform in shape. The western New York people seemed to incline to the belief that it is a better keeper than the Baldwin. I had rather doubted that before. I have not seen it here in Connecticut, but there is no doubt it is a good apple.

"At the meeting of the Maryland Horticultural Society

there was a fine exhibition of red winter apples produced in the mountain regions of western Maryland. Through the courtesy of the Maryland Society they are now on exhibition here in the hall to-day. There are several varieties there which will thrive well here and it would be worth your while to look them over.

"I believe, with Professor Gulley, that unquestionably there are half a dozen of red winter apples that are better varieties than the Baldwin, but we don't know it for sure, and that is just where the trouble lies."

MR. IVES: "I looked at some of those apples, and they certainly look to be very desirable apples. They look very fine, but is there any certainty that because they grow well in Maryland they also would here?"

MR. HALE: "I believe, and I know, than any of those apples that thrive well in that mountain region of western Maryland at an altitude of 1,400 feet will do well here."

MR. MOORE: "I have been making a test of the Sutton Beauty and the Baldwin this winter. I have not many of either, but they were both raised in the same field, and both have had equal care. I opened a barrel of Sutton Beauties and a barrel of Baldwins at the same time, and I think the Suttons kept rather the better. That was rather an inducement in treating fruit if the quality is all right. In my case the quality was certainly inferior to the Baldwin. My family prefer the Baldwin either for cooking or eating. In cooking my family found the Suttons much inferior to the Baldwins, and for eating certainly."

THE PRESIDENT: "My experience perhaps is not worth very much, but I think if I was going to set out those five hundred trees I would make the first three hundred trees Baldwins, and then I would make the next hundred and fifty Baldwins, and the last fifty,—I guess I would put in Baldwins."

MR. HOYT: "Professor Gulley was speaking of the Jonathan. The Jonathan apple I think is going to be a very desirable apple. The trees bear young and fruit very profusely. The apple grows fast and is of a beautiful color. In the orchards that bore this year the fruit was a little dull in color, but I think you will make no mistake if you set Jonathan apples.

"I also want to speak of the Wagener. That is an apple I never have tested until this year. I never have had a very favorable opinion of it, but my opinion, from the exhibitions I have seen of it, and from the exhibition of it in our own orchards this year, has become more favorable. The trees bore young, bore fully, and the apples are of good color and fair size.

"As to the Sutton Beauty, I should say to you as I said at the meeting of the State Board of Agriculture, go slow with the Sutton Beauty. The Sutton Beauty does not grow well as an orchard tree. If you graft it in the top with the Baldwin or some strong-growing Northern Spy grafts, I have no doubt it would do well.

"There is one other apple that I meant to have spoken of this morning, which I think promises fine for a fall apple, and that is the Princess Louise. It originated in Canada. It is a fall apple, and I think one of the most beautifully colored apples that I ever saw. It is a fair standing apple, but of course you can't raise it in as large quantities as you would a winter apple. The old Baldwin is still the stand-by, and at the same time don't forget the Rhode Island Greening. The time is coming when the Rhode Island Greening will fetch a great deal more than it does now."

Mr. T. S. Gold: "Our president has taken it for granted that one question which has been agitated from time to time is fully settled. That is, that the orchard with one variety will bear just as well every year as those same trees of that variety would bear if there were other varieties planted with them. Now, it is claimed that there are some varieties that do not bear well unless there are other varieties planted with them. I am inclined to think that that statement is pretty well sustained. Whether it is fully so with regard to the Baldwin or not I don't know, but I think I should prefer in planting an orchard of Baldwins to put in the others, as that might insure me against that possible failure that the Baldwins sometimes meet with. I am not fully satisfied about it myself, and should like to know whether there is anything in that idea. Is there anybody here who has any facts upon that? Whether or not, if you plant a single variety the trees will

bear as regularly and as well as in an orchard where different varieties are brought into close contact?"

MR. HALE: "In answer to that, of course the apple orchards of western New York which they planted twenty-five to thirty years ago when the Baldwin was the one main apple throughout Niagara county and through that region ought to afford some information, and they do. Some of those orchards have done well. There are orchards, however, which were planted solid with Baldwins which have failed for ten years in succession to get a perfect crop of fruit. There have been years and years when they had very few apples indeed, and I think the best orchardists are adopting the plan of introducing other varieties into their orchards."

THE PRESIDENT: "I think that may be true of some kinds, but I do not think it is so with the Baldwin. I have had them year after year with good, full crops. I don't think it makes any difference."

MR. E. HOYT: "There is another apple that I might speak of, and that is the McDonough Red. The trees of that variety that fruited for us produced an apple of fine appearance. It is a fine, heavy bearer, bears young, and produces a fine dark red apple. It is a beautiful apple, and compares well with the Jonathan. It is as good in color as that apple but I don't think as good a keeping apple. I do not think it will keep as well in this climate as it will further north, but certainly the fruit is a beautiful apple, and the tree is a good grower."

THE PRESIDENT: "We have on our list of speakers for this afternoon Mr. J. Clarence Harvey, of New York, editor of the "Fruitman's Guide," who will give us 'The Connecting Link Between Fruit Growing and Fruit Selling.'"

"THE CONNECTING LINK"

MR. HARVEY: "It has been said of a man who never suggested evil, Mr. President, that he could always suggest a remedy. Now, while it is not in my power to tell you what spraying mixture you should use, or what fertilizer you should

use, or what tools you should use, I can at least turn my prospectus over to you and tell you something of the function of the trade journal. It seems to me that one of the best things, and one of the most beautiful pictures that I have in my mind to-day, is associated with one of the most beautiful poems I ever knew.

"Come back a few years with me on the wings of your imagination, to where the greenclad trees are waving on the campus of Bowdoin College. There stands the Cambridge poet, Longfellow, fifty years after his graduation, his snow-white hair blown by the summer breezes, his lips voicing the sublime thoughts and lessons of his 'Morituri Salutamus.'

> "'Oh! Cæsar, we who are about to die,
> Salute you,' was the gladiator's cry,
> In the arena, standing face to face,
> With death and with the Roman populace.

"So, that grand and noble nature, knowing that his sands of life were ebbing, saluted not only his classmates but the youth who were to fill their places, and assured them that it is never too late to take up a task if the end to be attained is worthy, and gave as an answer to the cry:

> "'It is too late.' Ah! Nothing is too late,
> Till the tired heart has ceased to palpitate.
> Cato learned Greek at eighty; Sophocles
> Wrote his grand Œdipus and Simonides
> Bore off the prize of verse from his compeers,
> When each had numbered more than four-score years.
> And Theophrastus, at four-score and ten
> Had but begun his 'Characters of Men.'
> Chaucer at Woodstock, with the nightingales,
> At sixty wrote the Canterbury Tales.
> Goethe, at Weimar, toiling to the last,
> Completed Faust when eighty years were past.
> These are indeed exceptions, but they show
> How far the gulf stream of our youth may flow
> Into the Arctic regions of our lives,
> Where little else than life itself survives.'

"So I, in spite of the years that have taken the thatching from my roof, have set myself a task, that of creating and

building up a connecting link between you, the growers, and those who distribute and sell your products.

"He (the distributor and seller), if he does his duty to your shipments, has little time to write to you all, but I can catch him sitting on an apple barrel, taking his after luncheon cigar, and I can find out his likes and dislikes, his theories and plans, his demands and his restrictions, and once a week I can take his words as a text and preach to you through the mails.

"I know that in attempting to get you together in this way, for an exchange of ideas each week, I have taken a large contract, a contract which is beset by so many difficulties that at times I am reminded by my limitations of a story which I know you will pardon, because its moral points so directly at me and illustrates how thoroughly I realize how much I have to learn. Two pomological gentlemen were walking over a fruit farm one day, and through the farm ran a railroad. As they came to a crossing, they saw a young bull, with his head lowered, pawing the earth and bellowing and making all the necessary preparations to butt the approaching express train off the track. One of the gentlemen said to the other: 'Now, what do you think of that?' The other gentleman replied: 'Well, I admire his pluck, but damn his judgment.'

"I think, however, that I have one advantage over the bull. The express trains with which I come in contact occasionally slow up and take me on board, as you have done at this meeting.

"Just what the function of a trade paper should be is a problem, and the trouble is that any man who even half way solves that problem retires from business, owns his own automobile and leaves the solution to his successors. But in the struggle to solve that problem, there are countless benefits to be derived by the man with the hoe.

"When your receiver writes that your car-load of peaches or apples or berries went straight to the dumps and that the charges are seventeen dollars more than he could even dream of getting for them, a feeling of unrest steals over you and you hunger for a few more details than are given you in the receiver's typewritten letter. There is where your trade paper comes in with its weather reports, trade conditions and record of sales.

"On the other hand, its columns are open for your reports on prospects and conditions. If your orchards or your fields look promising, your receiver must enlarge his avenues of distribution lest local gluts destroy your market. The trade paper should be an information bureau, where facts by wire, mail messenger and personal contact concentrate, and after being summed up and an average taken, are given to you again for guidance in your business transactions.

"'How shall we ship our goods?' 'What shall be the style of the package?' 'How shall we grade our products?' 'By what route will they reach the market in the best condition?' 'When shall we begin to ship?' 'How long can we keep the season open?' 'What new markets can we count on for distribution?' These and a thousand other questions rise, and if you read your trade paper religiously, however much it bores you, at times, you will find that somehow, somewhere, by somebody, the questions get answered.

"Then, too, you keep in closer touch with the sellers of your products, for we all have something to sell, whether it be brains, potatoes, muscle or ingenuity; they are all merchantable commodities. Through your trade paper and its comments and items and illustrations of men and things, you are, as it were, within arm's length of those with whom you are dealing.

"You do not ship cauliflowers to the man who died last week if you are getting your weekly budget of news by the earliest mail, nor do you write to the man who eloped with the mayor's daughter for quotations on Seek-no-furthers or smooth-skinned pears.

"But among the most important of the attributes of the trade paper is the fact that the trade paper needs you. When we say to the broker and jobber and commission man: 'Please advertise with us,' he promptly says, 'Why?' and we must answer: 'Because we go directly to the people you want to reach,' and in order to go to those people we must seek out this grower and get the matter that another grower wishes to know. It is simply a case of scratch-my-back-and-I-will scratch-yours, and the trade paper does the scratching.

"We sometimes send the paper to a man for a few months

to whet his appetite for it — to let him acquire the habit of taking it from the office and then we write him: 'Since such a time, we have been sending you the paper and we hope you find it a help. May we have your subscription?' I assure you we are quite apt to get a postal, saying: 'I am reely too buzzy to read trade papers,' and he spells really with two e's and busy with two z's.

"It is not difficult to picture that man hurrying to his place of business before daylight, to put seven barrels of apples on a wagon and five crates of fruit on a truck and then for the rest of the day chewing a five-cent cigar and telling the Chinese laundryman next door what ought to be done with the tariff. That's the kind of a man who is too busy to read a paper devoted to his interests.

"Imagine if you can, our good friend Hale leaving anything about peaches unread during the peach season. If I remember rightly, I had some difficulty in making him a convert, not that he didn't believe there were things to be told, but he doubted my ability to tell them. I am not quite sure that he is convinced yet, but at any rate he now gives me the benefit of the doubt.

"And now another point with regard to the mechanical side of a trade journal. It should be well printed, in clear type, on good paper, and attractively arranged under conspicuous headings so that it may be a pleasure rather than an effort to read it. It makes a world of difference whether your dinner is served on broken plates and over soiled table linen, or whether the table and appointments are carefully arranged by a competent waiter, and the same principle applies to a weekly feast of reason and flow of soul, even though there be a strong business flavor to the gifts the gods have provided and the printer's devil has put forward.

"There are, as well, duties which the subscriber is apt to forget. Reciprocity should prevail. If a reader gets from some communication, valuable ideas which save him time or money or labor, he should allow his conscience to assert itself and during the long winter evenings sit down and write out the result of some of his own investigations and experiences for the benefit of the other man. It will be good mental

exercise and far more profitable in the long run than quarreling with the hired man.

"The paragraph in the prayer book which tells how prone we are to do those things which we ought not to do, and to leave undone those things which we ought to do, is nowhere more strikingly illustrated than in the line of trade papers. A man will look for his daily paper and miss it as he would miss his morning coffee if it were not regularly forthcoming. He will cling to the strap of an elevated train with one hand and wrestle with his paper with the other in a wild endeavor to find out how somebody he doesn't care about was murdered by some one he doesn't care to know.

"That same amount of effort devoted to his trade paper would quite possibly have brought him ten cents more per barrel on that day's car-load of apples. And, what is more, you, sitting at your cosy fireside, reading the paper which he neglected, will have gained the right to say: 'Why didn't you get that extra ten cents on my apples? I see Mr. Jones, on the opposite corner, did so. I guess I'll try Mr. Jones.'

"I know that many of you are pomologists, not for revenue only, but because the artistic side of your natures cried out for the development of the earth's gifts. You don't believe that talents should lie hidden in a napkin. You want to put a red cheek on a green apple or to make the red apple redder. You love to flirt with Mother Nature: to stroke her breast with the hoe, massage her with the harrow, and manicure her with the pruning knife, and feed her with fertilizers to see how she'll act.

"And so far as you are willing to confide in us we gladly send the results of your labor and thought out to the world, and our only regret is that the world to which we send it isn't larger.

"If I am not exceeding the time limit I will say in conclusion:

> "Men glance the morning paper through and say:
> 'There's nothing in it. All a senseless mess.'
> Three lines of censure when they go astray,
> They'll climb ten flights of stairs to stop the press.

No man who has a grievance, real and true,
In this the age electric, suffers long.
If he but seek the press, 'twill justice do;
'Twill state his case. The public rights the wrong.

"The man with goods to sell who sits and mopes,
In some back office, hung with cobwebs gray,
And feeds his soul on last year's blasted hopes,
And wonders why no business comes his way,
One day, wakes up; spends ten to make a five,
And finds next day, that five will make a ten.
His lesson learned, henceforth he keeps alive
And keeps his name before his fellowmen.

"I did not come to canvas for an ad.,
Nor make you think of these things, 'gainst your will;
I simply point a way, more bright more glad,
More easily the pocketbook to fill.
Tar Soap and Beeman's Gum, Sapolio,
And Ivory Soap and Pillsbury's Best Flour
Now bank their millions. Some one chanced to know
That ink and paper wield a wondrous power.

"But not alone the posters red and blue,
Nor yet the broad display of black and white,
The squibs, three lines in length, perhaps but two,
We read, remember and repeat at night,
These plant the seeds that grow within our minds,
And bring conviction home to us at length,
The spoken word but brief existence finds,
But, printed, it acquires a tenfold strength.

"These white-winged messengers of news and chat,
Of song and story, prose and mellow rhyme,
Are angels, sent to teach us 'where we 're at,'
And keep us posted, saving half our time.
Nor would I hint that editors have wings,—
I sometimes question if they ever will;
We have our heaven on earth, when some one brings
Full payment on a long neglected bill."

Mr. Harvey's very interesting and unique address was much enjoyed by all present. At its conclusion the president introduced Dr. Leroy A. Smith, of Higganum, who presented the following valuable paper on "The Food Value of Fruits":

THE FOOD VALUE OF FRUITS

Mr. President, Ladies and Gentlemen:

If you will take that program and add three more words to the topic announced "To the dyspeptic" you will get my subject correct. I happened to be one who was unfortunate enough some thirty odd years ago to contract that terrible disease, diphtheria, following which I have had quite a train of bad conditions, about all I could have, and among them dyspepsia, and therefore I have tried all these years to find something to eat that would not distress, and at the same time something which would benefit my little body. So my topic will rather be my personal experiences with fruit eaten under such circumstances.

Almost any one wants a good appetite so far as I know. I pity any one who does not have a desire to eat. We observe that most people like good things to eat, and yet, notwithstanding, a great many will say, "We do not have anything very good to eat at our house." Of course they do not.

It is hard to tell any one what to eat, for there are so many opinions. One will tell you that you eat too much; another that you do not eat enough. This one will say "You do not want to eat any breakfast," that one "Do not eat any meat," while another will say, "Eat more meat." Did you ever hear that any one has said, "Do not eat good ripe fruit"? I never have. Perhaps the latest fad for an all-round ration is buckwheat cakes and cheese. I cannot account for the channels in which some minds run. Perhaps you may be able to do so. Let me say right here that I often tell my dyspeptic patients "it is not so much what you eat as how you eat." I have had patients say, "I crave baked beans, but the doctors have all told me not to eat them." But I tell them, "If you really crave them, eat them (with the pork left out), and as yet I have to see the first one harmed thereby.

I am going to tell you to-day what I have found best for me to eat and how to have some of it cooked. In the fruit line, strawberries will be the first I will mention. There are

a great many people who say they cannot eat strawberries and strawberry shortcake. I will venture the opinion that the reason for such inability is unripe fruit and poorly made shortcake. Have you ever eaten a piece of shortcake at a restaurant, with the cake three-quarters to an inch thick, with only one layer of strawberries, and they not near enough together to be neighbors, and the berries not half ripe? And after eating the same you have felt as though some one had dumped a load of lead into your stomach. If you have not, I have, and paid my twenty or twenty-five cents for same, and tried to make myself believe for a little while only that I had been eating fruit. I very soon found out that I had been eating one of the most indigestible compounds made of lard and flour, and I felt like one who thought the next best thing to do was to take an emetic, and offer my little prayer, "Lord, forgive me this time, and I will never do so again." I will venture to tell you how to eat strawberries.

First, for a family of four, not less than four quarts of berries each day, and they to be thoroughly ripe. I discard all of the very sour kinds. Please do not eat warm bread or biscuit with berries.

Next, how to make a shortcake. Make a plain biscuit cake shortened with butter. Roll as thin as possible, and bake in three layers, a little butter spread over each layer to prevent sticking together, and bake quickly in a hot oven until brown. One hour before the cake is ready, have prepared two large quarts of strawberries which have been cut in two, and sugar put on to them. When the cake is baked, separate the layers and place in a deep earthen dish, and cover each layer with the berries, adding cream if you wish, and cover tightly with a plate; set the same in the oven with the door left open, and when ready for dessert one quarter of this will make one feel as if he were dining at a king's table, for you have not been eating a lot of stuffy shortcake with hardly any fruit but lots of fruit and very little cake.

I have been telling you how I eat my strawberries. In fact, that is the way we make our shortcake for peaches and blackberries. Perhaps right here I might say that we eat

plenty of cherries, grapes, plums, and blackberries, and our butcher's bill is smaller on account of it, and our health much better.

Some, yes, many, are afraid of grapes since the appendicitis scare in the papers. The late Dr. Storrs told me that he hardly ever found grape seeds in the appendix. That reminds me of the influence of one of those squibs in the newspapers. When located in Hartford twenty-five years ago, he would see about every year a little notice telling the benefit of nettleroot for neuralgia, and it would not be three hours before we would have a call for nettleroot. I think it will be some time before people get over the scare those notices gave and go to eating grapes again as before. We used to buy grapes by the dozen baskets before ours began to bear.

But I must hasten on to two kinds of fruit that people do not eat enough of; viz., peaches and apples. Why? We usually buy peaches by the number of baskets at a time, select the perfectly ripe ones to eat each day, and when they ripen faster than we can eat them we can them, and a peach is not fit to can unless it is just ripe enough to eat, and if we have a number of baskets we can always have enough for four to six cans at a time. If late in the season, and we know we will not get any more, we fill all the available space in the refrigerator with peaches, and for weeks we have all the peaches we want to eat, and hardly ever have to can any of them. I would rather pay a dollar or more for a basket of peaches than the same amount for beef bones, even if there is a little touch of meat on them. I am not so much afraid of uric acid poisoning from eating peaches as flesh, and you all know that rheumatism is not a pleasant disease to have, especially when you want to sleep, and cannot because of the terrible pain. Eat more peaches and less meat if you want to have less rheumatism. I would be willing now to stop and eat some nice ripe peaches. Perhaps you think they would be better than my talk, and I would agree with you. Next to strawberries I place peaches, and only wish the season for them was longer.

The apple will be the last fruit that I will mention. It

is the stand-by. We can have apples the year round with a very little trouble. Who says that an orange is better than an apple? The peel of an orange is not fit to eat, and the pulp no one ought to eat, and all you have left is a little juice,—good, I know, but what a price to pay for a few teaspoonfuls of orange juice! The next time any of you think that an orange is better than an apple, stop right where you are and eat one, and then eat a good ripe apple, and see whether you have not been mistaken. No one ought to put away for winter use less than five or six bushels of apples for every one in the family, and if you have good-sized boys make the bushels eight for each one. In fact, we should eat more money's worth in fruit than in meat for health. We have found that uncooked apples had better be eaten just before meals, but that is not the way we eat the most of our apples. There are so many ways that apples can be used that I will mention only a few. Apple tapioca pudding makes a dish that if more was eaten, and less pie, it would be better for the human family.

Brown Betty, a good way to use up old bread, with some cream and sugar, makes a dessert good enough for any one. Baked apples are fine, especially sweet apples, but there are so many wormy apples that I am rather spleeny against them, and had rather they would be pared and sliced to remove all the bad places than to eat them, not knowing what I was eating. The twentieth century, however, is going to do away with all bad fruit, I suppose.

Apple custard baked as a squash pie (if you want, once in a while, to eat pie crust) some think is very fine. Of course, a good nice fat-sliced apple pie, with thin pie crust, tastes good, even if the laws of health are broken.

A good many think that an apple dumpling is one of the rare treats. The last place I saw one was in a wash-bowl, where it had landed after leaving the stomach of a patient, who felt better, a good deal, than he did before he threw it up. I rather think the wash-bowl is a better place for an apple dumpling than my stomach.

We use nearly every day, and almost every meal in the day, just stewed apples (during their best season). What

can you ask for that is any better with your meals? I do not mean as you do when you say you like coffee. Excuse me if I say you do not like coffee, with the cream and sugar left out. I mean stewed apples with no sugar, unless with some of the more acid kinds.

Now, then, to sum up. Let me urge upon you, raise all the fruit you can. Give away (to the poor, I mean) all you can, and sell all you can. Do not forget that the apple is the best all-round fruit we have, and if you eat apples in the right way, with other fruits in their season, you will be healthier, happier, and a good deal more handsome.

THE PRESIDENT: "Taking up the question list again — Question No. 3. 'What effect does spraying with Bordeaux have on the keeping qualities of apples?' Can some of the professors tell us?"

MR. LOOMIS: "That question seems to imply that spraying with Bordeaux is the best way. I know of some folks who by some actual observation find that Paris green alone is very effectual."

MR. PLATT: "Bordeaux put upon the apple leaf, and upon the European plum leaf, keeps that leaf in a more healthy state than it would be otherwise, as frequently the leaves will be broken off by a fungous disease of some sort, and drop off prematurely. Now if Bordeaux is used the leaves will hang on much longer; in fact, almost until the frost comes and causes them to fall. There is one effect. The apples are filled with the good qualities of the fruit in consequence of the leaves remaining on in good condition. The flavor of the apple is better, and the texture of the fruit is more solid and heavy. The apple itself will remain on a sprayed tree longer than it does on a tree that is not sprayed, and it keeps longer after you get it off. I think if anybody tries it fairly they will come to the conclusion that it is of great benefit."

MR. LOOMIS: "How about the Bordeaux mixture setting sufficient to kill the apple bud?"

MR. PLATT: "No; it will not with ordinary care. Do not use Paris green, for I believe Bordeaux is much better, is less dangerous, and gives better results."

MR. HALE: "This matter was up at the meeting of the Western New York Horticultural Society, and the general opinion there was that the apples from trees that have been sprayed with Bordeaux were sounder and of better keeping quality. It helps to make good, healthy foliage, and that is a great help to the proper development of the fruit. I do not think there is any question in the minds of those who have sprayed with Bordeaux but that they get far longer keeping apples, and far better looking ones."

A MEMBER: "I have sprayed my own trees with a mixture of Paris green and water until this year, when I sprayed with Bordeaux mixture. I could not tell what the difference in effect has been though, because, although my trees were well loaded with fruit, there came along that big wind that took off about eighty per cent of them, so I have had no chance to make a comparison."

MR. INNIS: "I would like to ask in this connection if it is possible to know why this year particularly, the Baldwin perhaps worse than most any other variety, both on the sprayed and unsprayed trees, have rotted so from the core outward? Nine-tenths of my fruit, all Baldwins, went that way, and much of it was so much so that the apple on very little pressure would simply break all to pieces. I would like to ask if anybody here can account for it?"

THE PRESIDENT: "Perhaps that was a local trouble confined to your orchard."

MR. INNIS: "It may be local so far as our locality was concerned, because my neighbors, many of them, were in exactly the same boat."

A MEMBER: "My orchard was troubled in the same way. First you would see a little spot that was just perceptible around the stem, and by examination you would find that it went right through to the core. I put in ninety bushels of Baldwins on one day, and when I came to look them over this winter I found that a large percentage had started from that way, from the stem inward to the core, and from the core outward to the stem."

MR. IVES: "I would like to ask if they were sprayed with Bordeaux mixture?"

ANSWER: "They were not."

MR. FENN: "I had some trouble with my Baldwin apples which never occurred before. I found that they decayed right around the stem. In a good many cases you could pick up an apple that you thought was sound, squeeze it with your hand, and you could crush it to mush. I do not know what was the cause of it, but I know this: that my Baldwin apples are very much more tender this year than usual. Whether it is on account of the tree, or the season, I don't know, but they bruise easier than formerly when they were sprayed. I will say that I use a pound of Paris green to sixty gallons of water. Years ago I did not use any Paris green and I only got about 80 per cent. of an average crop, and a lot of second quality and third quality of fruit at that."

A MEMBER: "I was troubled the same way with Baldwins, although very few of ours have decayed, and I don't think they are so apt to if you keep them where it is cold. My son says that he never saw apples rot as they have this year. I spray with Bordeaux and white arsenic."

THE PRESIDENT: "Question No. 4—'If the leaves drop from the currant bushes soon after the fruit is picked, are such bushes healthy?'"

MR. HALE: "The dropping of the foliage very soon after fruitage indicates weakness in the plant. Good healthy plants should keep their foliage until September or early October. If they drop their foliage as early as that I should want to spray in the spring with Bordeaux, and again during the summer."

MR. FENN: "I have made it my practice to spray for the last three years and with good results. I have used Paris green and Bordeaux mixture, and leaves hang on my currant bushes until the frost takes them off. That has been the experience of my neighbors also."

MR. INNIS: "I would say in regard to the currant, and of course the gooseberry is a full cousin if not a half-brother, that without spraying the gooseberry bush is entirely stripped of its foliage usually by the 1st of August, and if it is stripped you can depend on it that the next year your crop will be small, and the size of the fruit will be small, whereas

if you can have the leaves stay on until the natural time for the bush to shed in September or October, showing that the plant is healthy, your crop the next year will be good, other things being equal. That is so with both the currant and gooseberry, and I have found no exception to this rule."

At this point the president introduced the next speaker of the afternoon, the well-known horticulturist, Hon. Charles W. Garfield, of Grand Rapids, Michigan. In a most admirable address, Mr. Garfield discussed the subject of "Signs of the Times in Horticulture."

SIGNS OF THE TIMES IN HORTICULTURE

After the long and weary voyage, fraught with discouragements, nearly checkmated by a mutinous crew, the words announced from the lookout which put heart and life into every one, opened a bright promise for the future and united all in one great purpose upon those feeble vessels commanded by Columbus were, "Land ahead."

From that time to this this same expression, although used often as a byword, has meant a great deal in times of despair, has brought light into darkness and changed discouragement into hope. To-day, amid all the disturbances in the commercial world, all the anxieties connected with statecraft, there is a feeling among most thoughtful people that there is safety in looking toward the land. The tendency to center everything in the towns must be changed, or the congestion will breed ill health. Wisdom, discretion and a long look ahead all unite in the feeling of safety which comes with the growing popularity of rural life. Downing's advice, given more than fifty years ago, came too early to enter into the purposes of men in this country, but that counsel was made a purpose in England, and the result of it was that land-holding became popular; the cultivator of the soil became the leader of affairs; the farmers became something more than the bone and sinew of the land: they were the nerves also.

In a recent number of "The Outlook" the Spectator mentions this difference of feeling with regard to the promises of rural life between England and the United States, and empha-

sizes by his illustration the truth that, as our country grows older, the ownership of land, the development of a landed estate, the business of farming will become more and more popular. I verily believe that we are at the beginning of an epoch in this country, during which the men that are most greatly interested in affairs of rural life will rapidly forge to the front in moulding the destinies of the nation.

Americans have some attributes of character that emphasize their ability to make the most of the situation. I can perhaps illustrate this better by negative examples. In traveling through the southeastern part of France, and in skirting the beautiful lakes of Switzerland, I found a climate that was adapted to the growing of a wide range of fruits. The climate and the conditions have been there always, and still the people have not taken advantage of them and they do not grow the range of fruits that I find in a great many places in our own country not nearly as well situated or having half the valuable attributes of an advanced horticulture. In the vicinity of Boston, for instance, fifty years ago, there were grown nearly all of the finer varieties of pears known to the Old World. In the western part of Michigan we have all of the finer varieties of peaches extant growing successfully. In parts of Missouri and Kansas the finest apples in the world are growing in the greatest variety, but, in this ideal location for fruit culture which I mentioned, I found fruits of only moderate value and rarely any of the best.

The reason that you people live in Connecticut, and my people live in Michigan, may be found in a variety of causes, but whether in Connecticut or in Michigan we adjust ourselves to the conditions, and we bring to our conditions an ability and resource which enable us to evolve pronounced success.

There is a tendency in the realm of horticulture as well as in commerce, to equalize the conditions in different localities. Each locality reaches over into the ground of the other, and this fact is not one to be ignored or sneered at, but to be considered thoughtfully in connection with the business side of the occupation, and dealt with in such a way as to recognize it as a factor of great importance in connection with the attainment of success. The grower and the seller of products

must recognize in each other an agent for the prosecution of the world's business, and by mutual concessions and thoughtful consideration render each one useful to the other in the furnishing of earth's most delightful products to the consumer.

In the evolution of a wider horticulture, general-purpose things will naturally drop out. This is just as true in our occupation as in the work of the stockbreeder. The Jersey cow for cream and butter takes the place of the general-purpose animal, regardless of the fact that she will not turn out a very good carcass for beef near the end of her career. The breed of sheep that will produce the finest lambs for the early market, and thus bring the largest profit for the smallest outlay, will supersede the other animal that produces a fair crop of wool and a fair grade of mutton. So in our field the type of carrot that is a fair table product, and if not used for that purpose will do well as a stock product, will not answer the purpose, because the consumer calls for the finer quality of goods for his table, which can never be raised profitably for animals. The beet that produces the largest percentage of sugar is devoted to the sugar interests, while the variety that has the fine color and the delicate flavor must be grown for the connoisseur's table. We cannot choose the sweet corn that is only fairly sweet, but grows to a large size, with the view of turning it into ensilage if not used for the table, because the market demands the highest quality in corn for the table and for the can. The apple that is pretty good for culinary uses, has fair quality for dessert, and has pretty good shipping qualities, is not the apple for the future. The dessert demands the best, the culinary use demands the best, the distant market demands just as good quality as it can get, but the shipping quality must be the leading attribute. We cannot ignore these conditions, but we must adopt them, and suit ourselves to them in our career as horticulturists.

Specialties suited to the location are the order. Cranberry marshes that are admirably adapted to the growing of this delicious fruit must not be drained so that the land can produce cabbages, because the cabbage suits itself to a wider area. The quality of soil suited to the growth of celery will

naturally lead to the centralization of celery-growing in certain localities especially suited to this vegetable.

In my own town, on the south side of the city, we have soil that seems to be especially suited to the growing of lettuce, and so the glass houses devoted to the growing of this product are springing up everywhere upon this soil; while upon the west side of the town there is a soil that is perfectly suited to the growing of the highest grade of carnations and roses, and the result is that this industry is attaining a high development in this locality.

A set of greenhouses came into my hands in a little village just outside of our town. We tried lettuce and cucumbers and carnations, with just a moderate kind of success, but did not attain the high standard that we sought. As a result of experiment, we found that upon the soil in this locality we could grow a high grade of parsley, and in two years' time we put a product upon the Chicago market that was recognized of such quality as to secure a name for the village in which it was grown.

The sugar beet is another illustration. In certain localities it is found to develop more perfectly than in others, and naturally in these localities the factories will be established.

In western Michigan the peach territory is somewhat limited, so that no matter what the quality of soil or how successfully other things may grow upon a given location, if it is admirably suited to peaches, peaches must be grown there, and other things sacrificed in the interests of this fruit. So we find everywhere that these conditions must be recognized and we must square ourselves to the situation.

New factors are coming in constantly to modify the horticulture of the day, and perturbations will often lead to the discovery of the relationship of these factors to the trend of the business. Among these I may mention first the telephone. The first horticultural telephone that was put in in our city was at my own farm, and I was called for some time a "telephone farmer," rather in irony than otherwise, but I very soon learned that it was a great deal easier selling my products over the wire than it was to put them on the market at two o'clock in the morning, the early hour being necessary to get a position.

The electric railway has arrived upon the scene, and brings the truck farmer into closer communion with the green-grocer. With the telephone upon which to take orders, and the swift-moving carriage to take the products to market, we have two great factors in the horticulture of the future. The wonderful development of refrigerator cars is working marked changes in the business of horticulture. Speaking after the manner of men, we sometimes feel like "registering a kick" over the progress of the day. When the refrigerator car puts upon the Grand Rapids market the finest Georgia peaches at just the time when our local early fruits are ready to be sold, and this southern fruit is in perfect condition to be used, it seems as if the bottom was knocked out of the peach business in our locality. But we "get our second wind" and learn as quickly as possible that our early fruits are not hardly fit to eat anyway, and it is just as well not to have them in market; and so we change our methods and grow the later kinds that do not come in competition with our neighbors' fruit. The result is all in the interests of the consumer, for he gets a better quality of fruit throughout the season.

In my boyhood days I used to make a nice lot of money out of the garden by selling watermelons. In these later years the Alabama and Georgia, Arkansas and Missouri melons are placed upon our market in perfect condition long before we have any for sale, and when our crop of ordinary melons is ready for sale, nobody wants to buy them. How do we suit ourselves to the conditions? For we must do this. Why, we simply grow a quality of melons that cannot be shipped. We use our soil to grow the Dark and Light Icings, and melons of that quality which hardly bear transportation in any other way than on spring wagons, and so we hold our own.

Economic storage comes in as a wonderful help to the horticulturist and to the tiller of the soil. To-day, a few men in our town are putting upon the market the finest quality of Greenings, Jonathans, Northern Spies, in the face of the fact that our fruit decayed very rapidly last autumn and it was with the greatest difficulty under ordinary methods that we could have any for winter use. These men are enabled to do this because they have taken advantage of the

storage system, and this fine-flavored fruit is kept in perfect condition to put upon the market day by day in a season when it brings the largest price and when it is most attractive to the consumer.

Then, there is the rural mail delivery that has developed so rapidly throughout our country, which carries the market reports to the farmer every morning. This, with the telephone and rapid transit, puts the countryman in close touch with his fellows and enables him to take the same advantage of knowledge that his city brother does in the business of the town. The carrying facilities have been very rapidly perfected during the more recent years. At the World's Fair we had a perfect exhibit of Australian apples, that compared favorably with anything we put upon the tables from the states; and I saw in the London markets as perfect barrels of apples from Australia as were delivered from France, notwithstanding the wide expanse of sea to be traversed.

Suitable combinations are of no inconsiderable importance in arranging a business in horticulture. I find, for instance, that winter eggs are profitable. In order to have winter eggs, hens must have green produce. For years there was a waste of green produce from my truck houses, so the winter egg was combined with the winter lettuce, and the combination proved to be profitable.

We found, in the growing of cucumbers, that in order to have a perfect set upon the plant within the forcing house, a great deal of work was required with the brush to perfect the fertilization of the blossoms. We added a few swarms of bees, and found that they not only did the work of fertilization in the greenhouse in a most perfect manner, but they fitted in nicely with the other branches of horticulture pursued on the farm.

The utilizing of waste places is a matter of importance in connection with the prosecution of horticulture. I recall a simple instance now so common of utilizing all of the room under the benches in the forcing house for the growing of such plants as need little light. Our plaster caves at Grand Rapids were considered to be utterly worthless holes in the ground until some one of resource started mushroom beds in them and has

developed a valuable industry in a place that was considered utterly useless for any purpose.

In these days of close competition, the margins are so often in the incidentals. When timbered lands cost almost nothing a large part of the timber could be wasted in sawdust, the trimmings of the logs could be burned up in heaps of débris; but now when the stumpage is so high, the lumberman must reduce the waste in sawdust to a minimum, and then it must not be wasted but used as fuel. All of the poorest parts of the logs are either held for wood or wood-pulp, and so nothing is lost and really the margins of the business lie in the careful using of what was once the waste.

The other day a friend of mine visited with me our church edifice, looking over the place to see if there was anything needed in the way of repairs. He is a furniture manufacturer; he has engines and boilers and an extensive heating apparatus, and one of the things he noticed in the church was that the main pipes carrying the steam from the engine room to the auditorium were perfectly bare. He said these should be felted at once, and I asked why. "Because you are losing so much heat. Why, if we were so extravagant as this with the heat in our furniture establishment, we could not be in the business," illustrating to me forcibly the importance of economies in the details. In no occupation in the world are these economies so apparent or so important as in the prosecution of horticulture.

If I read the signs of the times aright, we must grasp, in the right way, the most important levers of success; we must grasp them with no uncertain movement. The horticulture of to-day is upon a higher level than it was a few years ago. Our horizon is a wider one, and we must recognize this. It is well to have one's ear to the ground, but it is better to have his eye toward the horizon. With the wider vision comes a greater responsibility and greater need of knowledge and greater intensity of action. With the progress must come a growing respect for the products that we grow. In many southern towns to-day the tomatoes are brought in loose in wagons and one can see them upon the markets, the juices dripping through to the ground. There are places in which the finest apples are thrown into the lumber wagon and jolted off to the

city. Potatoes are cut and haggled and bruised, squashes and pumpkins are thrown with the utmost carelessness against each other and against the hard sides of the wagon-box; but all of this carelessness and lack of respect for the delightful products of the earth meets its reward in small prices and in a degraded view of the earth's most delicate creations.

The successful apple-grower to-day handles his specimens with the most delicate care in the place of the old method of shaking them from the tree. The grape is so handled as not to remove the bloom from the berries. The strawberry is picked with the most careful thoughtfulness, without marring the delicacy of its texture. This care-taking pays not only in money but it pays in the development of a genuine love for the beautiful things that grow out of the horticultural art.

Another important matter that is growing with the years is the systematic grading of products. The horticulturist was the first to recognize the importance of this in connection with his most delicate fruits, but the man who grows potatoes and turnips and sugar beets recognizes the importance of a fine grade of product that he puts upon the market. The consumer's wants are thought of because the consumer makes demands. He wants every specimen good and fit for use, and has no patience with having the interstices of the larger fruits and vegetables filled with small stuff that is no use to him. The stronger he can make this demand, the better it will suit the most progressive horticulturist.

Then, there is the matter of developing early maturity in fruits and flowers and vegetables. The recognition of the importance of this matter was first noted, I think, by the stock-grower, and is illustrated in my own practice. I have a highly developed Jersey cow. She had her first calf when she was sixteen months old, and my neighbor farmers held their hands up in holy horror, saying that I was going against nature; that my cow would not be good for anything in a year or two. But my beautiful cow is now a good many years old, and she gives just as fine cream in just as large quantity as she did years ago. I have given her the necessary care and she became a cow none too soon for me, as long as she was good and as long as she behaved well.

We used to think that an orchard planted to Northern Spies might be very well as a legacy to our children, but we did not expect to get much value out of it ourselves. Now, through the horticulturist's methods, it is common to bring the Northern Spy as well as the Wagener into bearing in four years' time.

We used to think that an orchard of standard pears would bring no income for a good many years, but now there is not so very much difference between standards and dwarfs in the matter of early maturity.

The importance of this question of early fruiting in varieties can scarcely be overestimated from a practical standpoint, and if my neighbor does say that my trees came into bearing the third or fourth year when he thinks they ought to remain eight or ten before they bear their first fruit, and I will find they will give out before their time, I still maintain that I shall not live in my fears, but rather in my hopes. I shall have no anxiety about the continuance of bearing of my early fruiting varieties, if I can only give them the proper care. The recognition of this is growing in inportance with the years, and if I were to make a prediction with regard to the future of horticultural products, I should say that it will be a larger factor as the years go on. Almost any kind of a horticulturist can grow poor stuff, but it takes brains and pains to grow the higher qualities of products. And brains and pains are at a premium. "That is a beautiful apple; it just suits the palate, but it will not ship," is a statement that will show in it an element of weakness one of these days, and the man who uses the "but" in connection with his product to excuse himself for inferiority, will lack standing in his occupation.

One of the important things, it seems to me, that has been neglected somewhat, is the cultivation of the dealer or the grocer who handles the products of the orchard and garden and greenhouse. He is, in a sense, considered a sort of enemy, to be treated as if he was on the other side of the question from us. Now, it is my opinion we should cultivate a very friendly relationship with the man who sells our products. Would it not be wise to take him somewhat into our confidence and let him understand something of the difficulties in connection with

the growing of our product and the methods that we pursue, so that he shall know better what values are put into the things that we take to him to sell? Would it not be a perfectly safe thing to do to consider his judgment with regard to the kind of things we should grow for the market, and through this pleasant sort of copartnership, to be led to fewer mistakes in creating what is ordinarily called a "glut" in the market?

And then, there is the other fellow, the most important of all: the one who finally buys our products for the table. He is the man to consider. We may not like his judgment; we may think he is a great fool in many instances; but he is there, and he is the man that furnishes us the money, and he furnishes it the more readily to us if we can satisfy his wants and even his whims. So it occurs to me that a pleasant sort of relationship should be engendered between the man who is close to the soil and the one who finally consumes the products of that soil. The relationship will not only add to the stock in trade of the consumer, but it places the consumer upon a higher plane with regard to the products, because he understands something of the infinite pains it requires to grow the finest things for his table.

I am heterodox in another matter, but it seems to me that the horticulturist puts in too many hours of manual labor. He makes of his occupation a piece of drudgery rather than an added delight to his life. How can a man see the brighter side of rural life who puts in sixteen hours in hard work and the other eight in sleep, hardly ever looking up to rest his back, and never thinking about the stars that are above him, on the theory that he cannot get a living and get ahead in the world without doing this. It seems to me that the mistake is that he does not recognize the importance of the "think habit." But the danger is apparent to one who has eyes to see, that a great deal of the success in the life of the horticulturist depends upon his carefully matured plans, and these he cannot make successfully while he is a slave to the hard manual labor for all the working hours of the day. The time spent in learning what others have done, through the press, through public gatherings and institutes, is the best time that the horticulturist puts in. It does not breed laziness, but it does

awaken quickness of thought and aptness of methods in many ways.

There are some conditions to be dealt with in the evolution of horticulture that awaken in us a spirit of antagonism, but there is no sense in our disrespectful treatment of them because they do not meet our approval. The department stores have come into our commercial life, and many of us regret exceedingly that this method has been brought about. We rasp under the fact, but the department store has come to stay ; it is a factor of our business, and the quicker we recognize this and suit ourselves to it, the better we will get along. In the evolution of a truer manhood, mechanics are urged to own their own homes and have little gardens in connection with them. The horticulturist says this will take a large part of our market, because the mechanic gets his cash for his labor and spends it for our products. It will not be any keen satisfaction to us to kick against this development; it is a better one for mankind, and the thing for us to do is to suit ourselves to the condition, and be as helpful as we can to our fellows in the mechanical industries, who seek to be happier by growing the delicate things of the earth in their own backyards.

The gardener who, in the years gone by, was in the habit of getting quite large returns from his market-gardens, finds that the man next to him with almost no land at all, with a glass structure, will make as much money as he does in a year. There is no sense in kicking against the glass. The thing to do is to make glass a factor in one's own gardening; and so I predict that the gardens of the future will most of them in our climate have as a prominent feature the forcing house. Glass is at the front; it will maintain its ascendency because it helps men to control the climatic conditions which ensure success in the growing of products.

There is a new type of middleman that it seems to me would be well for us to recognize as a partner in the business side of horticulture, and that is the man who sizes up our ablility as horticulturists and comes to us with offers for our products, saying that he will take them as we grow them and deliver them where they will do the most good. I own that from my own experience, the man who can successfully grow the

very best things is liable to be the one who has no adaptability for the sale of those things. I was a victim, for a while, of the delusion that because I was able to grow a high product, I could sell it; but I very soon learned that I had not the ability to sell, and I would like to see that differentiation in horticulture which would lead to a condition of affairs that would enable the grower to give his entire time and thought and skill to the growing of the very best products, and that the man with exceptional ability as a salesman should take these products from his hands and put them upon the market. The grower who has a taste for growing the best things would be so greatly relieved that he could afford to sell his products at a very much smaller margin and lose thereby a great deal of worry.

Women have come into horticulture to stay. There are certain branches of horticulture they are peculiarly adapted to. A bright young woman of my acquaintance started three or four years ago to grow a few violets in a coldframe. In a little time she tried the hotbed, then she made a little greenhouse heated with a stove. From this beginning she grew a first-class product. I do not hesitate the prediction that before many years she will have the finest violet house to be secured and will be at the head of a large business, making it a great success. There is no use in our finding fault with this condition of affairs or trying to change the trend of things. There are certain operations in horticulture to which women are peculiarly adapted, and they will not only come to the front, but their success will command for them a place in the occupation, and the business will be improved in many ways as the result of this development.

In all this business of horticulture, the hired man is to be reckoned with. The farmers are everywhere in our state complaining that they cannot get help. In truth, in almost all of the rural occupations the cry is, "We cannot get help. As soon as a man becomes valuable he leaves us and goes into business for himself." I have only one suggestion to make in connection with the hired man and the hired girl, and that is, that they be treated with the respect they deserve when they perform their duties acceptably, and if we wish to continue

them in our service we must acknowledge them in a large sense as our partners in the affairs of life and worth our most thoughtful consideration; and until we take this fraternal and humanitarian view of the conditions, we shall be constantly menaced by the trials which are so commonly talked of in connection with the hired man and the hired girl.

The occupation of the horticulturist is not one that usually leads to large wealth, but he has other compensations in life more valuable than money. He must, however, if he secures the highest benefits from these other compensations, cater to some extent to the demands of wealth, because in catering to this demand he most easily draws upon the reservoirs of wealth to aid him in the continuance of the occupation that he follows.

As our population increases and becomes more congested, the question of intensive soil culture becomes of the greatest importance. The man who can get the largest returns from the smallest space of ground at a minimum cost is the one at whose feet we can afford to sit and learn. We must conserve our energy and quicken our powers of observation, watching the development of the needs, and moulding our methods largely by the evolution of the times. And in so doing we must avoid all the unnecessary strains of life. We must learn to pick up the light end of the log and to save ourselves by doing things the easiest way; we must recognize the fact that there are more things we do not know that we can learn by using to the best advantage our ability, than there are things we do know.

Allow me to illustrate this in a homely way by the sugar beet industry. For generations France and Germany have grown the sugar beet, until, as a result of their success, certain well-defined propositions were made upon which the native of this country thought he could succeed. Among the other things that were established as facts were the following: The ideal beet is one of medium size, with only a moderate development of length of root. The crown must be reduced to its lowest terms because of the lack of sugar in it; any forked appearance of the specimen beet is against its value in percentage of sugar. A good percentage of sugar is from 12

to 15. For years the production in this country has been based upon what were supposed to be facts as expressed in the above propositions.

All at once, in the Rocky Ford country of Colorado, the sugar beet industry starts up, and it is found that under their system of irrigation upon that soil beets can be grown with an average percentage of over 20; that long beets produce just as good sugar as the short ones; that there is as large a percentage of sugar in the crown of the beet as in any other part; that it does not make any difference whether the beets are forked or single-rooted, the percentage is just the same—really knocking out very many of what were supposed to be established facts.

We find in almost every branch of horticulture illustrations of this same truth; that after we have learned all we can, some day new conditions will in a twinkling produce an entirely different view. So we must not be too certain of what we call our facts, and we must have a broad angle of vision and a willingness to accept truth, no matter from what source it comes, and utilize it to the advantage of our calling.

There are some auxiliary conditions that I desire to call to your attention in connection with the "signs of the times," and first, I may mention the matter of health. To get the keenest satisfaction out of our occupation, we must first have health, and our methods must have this in view. And again, to reap the largest profits (not limited to money profits) one must know how to get the fun out of horticulture. By this I mean, know how to do things just for the fun of doing them, not always sizing up results by the amount that is turned into the bank account; recognizing the old saw that "a shilling's worth of fun is worth a shilling." Then, again, we must remember that we are engaged in an occupation the object of which is very largely the growing of products to feed the man-animal, not only the one outside of ourselves, but the one nearest to us. To grow such products and use them in connection with living so as to give the keenest satisfaction to the palate and develop the most complete organization of the physical man is a high order of business and if well followed will necessarily be well requited.

Then, in horticulture, the child's environment is to be

thought of because he is the best product we have. We cannot afford to neglect him in connection with our business; we should utilize every possible method to make our children happy in connection with their homes and with our work; and recognize them as our partners in life to such an extent that the occupation in which we are engaged shall be one of delight to them and one that shall become a part of the history they are making upon which memory will delight to linger.

Among the compensations of life in horticulture that are of the greatest consideration we may enumerate those which arise from what we sometimes call genius, but at other times, wisdom. The most successful man is one who, while he grasps the breadth of the situation, has the greatest knowledge of details, and who is willing in all things connected with his career to do his level best, for genius, you know, is the faculty of taking infinite pains.

Then there are some side views in horticulture that are supposed to attract only the specialist; but it seems to me there are two directions in which every horticulturist, no matter what his specialty may be, ought to take great interest. One is in the realm of the nursery, and I am impressed with the thought that in almost all branches of the practical art of horticulture, there ought to be some interest in the nursery department. In the growing of things from the beginning we get some of our best lessons that apply to the practical subsequent operations in the successful growing of almost all products for the market.

And in another direction I am certain that we all ought to take more than an academic interest; and that is in the art of gardening which finds its expression in the landscape. The man who knows best how, from the dark mould of the ground, to develop the delicate structure and high coloring of the peach and the apple, is, in his way, an artist not without reputation, but he is not recognized as he should be in the realm of art. The man who takes a block of marble, and through his art develops it into a beautiful effigy of the human figure, is recognized by the world as the highest type of an artist. The man who, with his brush and mingled pigments, places upon the canvas a picture of a landscape, and does it with skill, has recognition of high character in the field of art. Is not the

horticulturist who actually, by prophetic skill, develops out of the elements of his art, the *real* thing upon which that landscape is based, an artist as truly as the one who handles brush and pigments? My own view may magnify the art that I love so well, but it seems to me, in our field we have an art as delicate, as attractive, as elevating and as influential as any art in the world.

Now, while you rest your back and think for a minute, let me call your attention to the field of education. The man who has climbed by hard work through the schools to a commanding position as the result of unremitting study is very likely to feel that his reach is longer, his vision is wider than the one whose work and thought are in connection with the soil; but there are certain indications that in the field occupied by the educators there is a growing recognition of the value of that education which comes through a skilful development of the products of the earth. Instead of that sort of patronizing method which was once quite common on the part of the educated man of the schools in dealing with the educated man of the soil, we find in these later days that the schools themselves recognize the importance of the farmer's field as one in which to do their best work; and instead of having any of the top-loftyism about them in connection with the men who occupy positions in rural life, they are trying to get into closer companionship with the farmer and the horticulturist; and today there is a general feeling that has been growing with the years that we all are climbing upward, and that the mountain up which the horticulturist is climbing is one of as great importance as the one up which the educator toils, and that the range of vision is as broad from the one as from the other. Scientists of the schools recognize scientists of the soil. I can can also see a most delightful condition growing with the years among the people who have to do with the soil who recognize the great value of the scientific development so delightful in the schools and the desirability of utilizing these attainments in connection with their own practice. Thus is respect engendered by the people in different callings for each other and the growing appreciation of the truth that there is no aristocracy in knowledge.

Just one step further: I am glad to recognize a keener sense of the importance of a study of nature in connection with the development of the most successful methods in horticulture. I am glad to notice that there is a growing tendency of people in the city and the country to get nearer to each other and to understand each other, and this is because the denizen of the country is making it more worth the while. He is a larger factor in the world and he is worth cultivating by his city neighbor; and there is a growing respect for the art of horticulture which shows itself in the expenditure of large sums of money in the very things that are so common in the country, in order that they may be a part of urban life.

In connection with this may I incidentally call attention to a comparison between the dress of the American countryman and his cousin across the water: and this is not wholly to our credit. In a trip through England and on the continent some years ago, I made a special study of the markets, and I could not help but notice the respectable way in which people took their products to market. The man who took his load of cabbages or led his animals, or brought the product of his orchards on marketing days to the central stations were all dressed neatly and seemed to have a proper respect for the products they were selling, and a recognition of the people whom they expected would be their patrons. I am often ashamed of the dress and carriage and conversation of the men and women who bring the same products upon our own American markets. In this regard there is the largest opportunity for a wise and healthy development that will meet the approbation of all progressive horticulturists and all good citizens.

Now, in closing, let us for a moment reason together. We, as horticulturists, are in partnership with God. He has put in the largest amount of capital, but we have his confidence so completely that He gives us full swing in the disbursement of the dividends. We cannot grace our calling unless we appreciate to the fullest the great responsibility of our tenantcy and bring to it the proper honesty of purpose and recognition of the greatest factor that accomplishes success in this oneness with nature, which I mean by "partnership with God."

We must have a higher regard for earth's beauty and have

an every-day appreciation that this is the most beautiful world we know anything about and that we are placed in this garden to till it and to use to the best of our ability all the attributes of character with which we are endowed, and that we shall be held responsible for every delinquency in dealing with the elements that are placed in our hands; and that our sins of omission as well as commission will be laid up against us as truly in our treatment of the soil as in our treatment of each other. We must learn to be honest through and through and never to forget that this applies as truly to the soil as to our brother men or our Creator; and that there is a religion in horticulture that should go with us every day and that our calling is holy in just so far as we treat it as the calling to which God has called us; that the character which we develop in connection with the work we have chosen to do in this world will be moulded very largely by the view we take of the world in which God has located us, and the purpose we put into our dealings with the elements that are placed in our hands to combine into beautiful and successful creations for the benefit of man and the glory of man's Creator.

A brief recess was then taken, during which a very large number of those present reported at the secretary's desk to renew their membership in the Society.

THE PRESIDENT: "We will now listen to an illustrated lecture upon 'The San José Scale and Latest Methods of Treatment,' by Prof. W. G. Johnson, former state entomologist of Maryland and now associate editor of the 'American Agriculturist.'"

THE SAN JOSÉ SCALE AND THE LATEST METHODS OF TREATMENT

PROF. W. G. JOHNSON, NEW YORK

In taking up this question with you I feel somewhat like an old darky I met in Georgia last summer. I was curious to know whether or not they had any San José scale down there. I did not ask my host if he had the scale on his trees, but I went out and saw an old darky in the orchard. I said to him:

"Hello, Sam, come here! Have you heard anything about the San José scale since you have been working here, or have you seen it around?" He replied: "I don't know, boss. Dat name am 'miliar round here, but I ha'n't done seen dat Sam Jones on dis place, sure!"

I understand that you have not known of it very extensively in Connecticut, and I hope you never will, but, at the

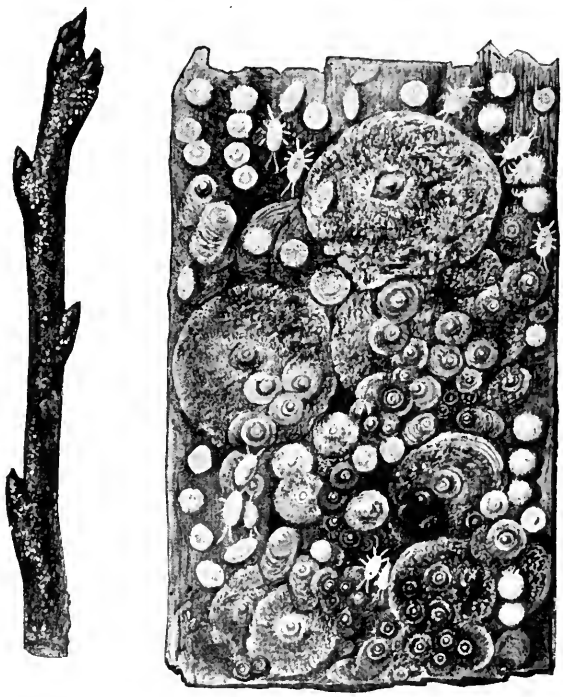


FIG. 1.—Appearance of San José scale on bark; *a*, infested twig, natural size; *b*, bark as it appears under hand lens, showing scales in various stages of development and young larvæ. (After Howard and Marlatt in Bulletin 3, new series, Div. Ent., U. S. Dept. Agr.)

same time, it is always a good thing to have your eyes open and know what is about you. Nobody needs to fear harm who gets ready for this thing. If you do not have the San José scale now you are very likely to have it soon if you are not on your guard. You have got to meet this condition. The question is, How are we going to meet it and what shall

we do to protect our orchards from the ravages of this little insignificant pest? It is of course unnecessary for me to say that this little pest is enormously destructive of the orchards where it locates itself and is allowed to propagate undisturbed. That being the case, let us examine and see what the little fellow is. In the first place, I must tell you it is so small you can scarcely see it with the naked eye, and it has to be

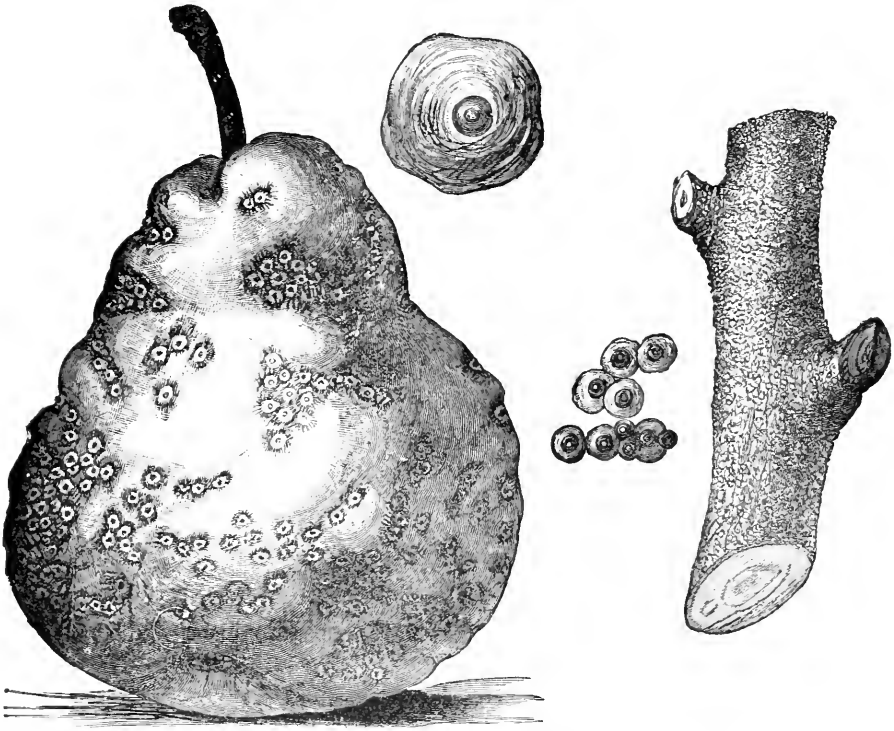


FIG. 2.— San José scale on twig and pear, with enlarged male and female scales. (After Howard, Year-book, Dept. Agr. 1894.)

magnified several hundred times to see it to good advantage. When you detect these little spots upon the tree, the scale of course is not apparent. The insect is underneath. It is entirely concealed and is shown in Fig. 1. If you turn one of the larger scales over you will find the female insect underneath, as shown in Fig. 3. Upon close examination of the specimen you will see how marvelously it is designed for the work of

destruction. Its organs are all small and undeveloped except those it uses in its destructive work, and in the propagation of the species, namely, its mouth and reproductive organs. The mouth is abnormally developed. That is the organ with which she sucks the life-blood not only from our orchard trees, but from many of our shrubs and ornamental plants.

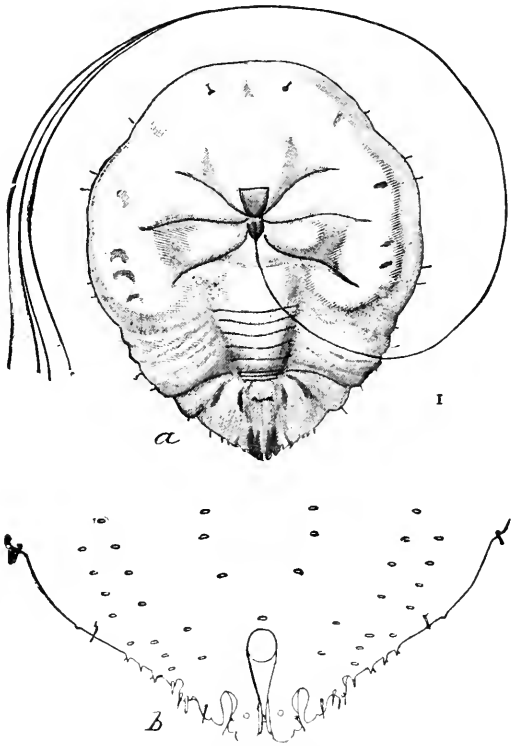


FIG. 3.— San José scale; *a*, adult female, highly enlarged, ventral view showing sucking tubes; *b*, anal plate, still enlarged. (After Howard and Marlatt, Bulletin 3, new series, Div. Ent., U. S. Dept. Agr.)

She inserts this lance-like beak, as seen in the illustration, into the plant tissue, and with the aid of other organs covers herself with a covering of wax-like material made from a secretion of the insect. She remains where she first inserts her beak. In other words, after an insect of this character once fastens itself to a tree or shrub it never moves from that particular point. After it inserts its beak, then, by no possible

means can it be transferred from one plant to another. It is only in the young stage that it can spread. The female scale is eyeless, wingless and legless, and for that reason it cannot transfer itself after it has once attached itself. All such organs, if they exist, are undeveloped, and all subjected to the development of the mouth, which is proportionately very large, as shown by the lash-like appendage in Fig. 3.

Turning one of these smaller elongated, foot-shaped scales, we shall find underneath the peculiar looking creature shown in Fig. 4. It is the male insect. In this case it has well-

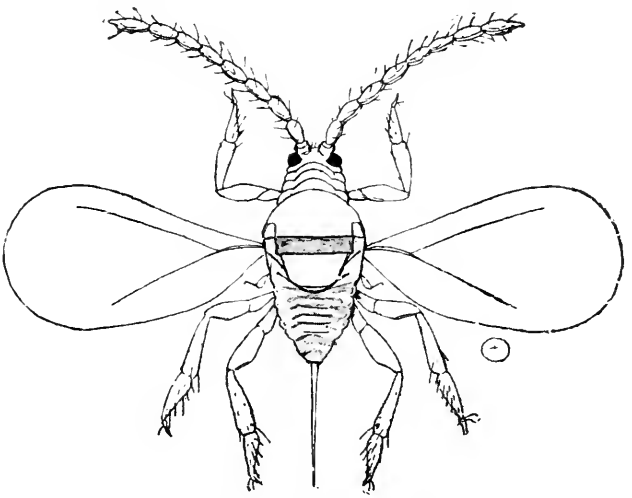


FIG. 4.— San José scale, adult male, greatly enlarged. (After Howard, circular 3, second series, Div. Ent., U. Div. Agr.)

developed legs, wings, eyes, and feelers such as we find in most insects. At the same time we find all these organs developed at the expense of the mouth. It has practically no mouth at all, and, of course could not talk back if it wanted to. On the other hand, the old lady has this organ well developed, and uses it to good advantage. Owing to the peculiar fact that it has no mouth, we can naturally expect that it takes no food. When this insect reaches maturity it appears usually at night, and in most instances only at night. Having no mouth, of course, the male would have no use for digestive organs, but from the fact that it appears at night we

would naturally expect it would have a well-developed pair of eyes. They are well developed, and nature has gone one step further. Where his mouth should have been there is a second pair of eyes. So he has four eyes instead of two. I throw in these things incidentally, to give some idea of the peculiar and interesting features of this wonderful insect from a scientific point of view.

There is another point that is peculiarly interesting, and that is, this creature is not produced from eggs. The young are born alive. A surprising thing about them is the fact that a pair of them, from early spring until late fall, may become the father and mother of a progeny of over three billion individuals. That is a surprising statement, but such is the case. As a matter of fact, the first brood of young in the locality of Hartford would probably appear from about the 7th to the 15th of June, and within thirty days from the time the first are born they are reproducing at the same rate. The mother producing the first generation in a very short time becomes a grandmother, a great-grandmother, even a great-great-grandmother. With this condition of affairs it becomes very important to examine the young insects. The young insects have well-developed legs, and they appear pretty well adapted to take care of themselves. (See Fig. 5.) The young insect, I assure you, is an industrious chap, and gets right to work as soon as possible, inserting that lance-like beak in the tree. After it finds a suitable place to insert its beak, and settles down, it begins to shed through the pores on its back what looks like a mass of wax. The resemblance is more like a minute mass of wax than an insect (as shown in Fig. 5, *c*). They are about the size of the diameter of a pin. That would approximate very closely to the size of one of these insects, but, at the same time, what they lack in size they make up in numbers. An individual insect upon a tree or shrub would have no effect upon it at all, but when you combine the force of the attack of a billion of these tiny creatures, working from spring until fall, it is a very rare case that is able to withstand it.

The hardiest fruit trees are not able to survive it. The length of time necessary to kill the tree depends somewhat

upon the variety, but if the scales are numerous enough they are bound to prevail in time. Now let us study this a few moments. Coming out from these pores on the back we find this white or grayish mass. As I have said, it somewhat resembles the product of the purest white wax used in the arts for making various things, but as a matter of fact it is the product of the insect itself. We must not overlook that. This wax, after a time or in a few days, collapses, or falls over the back of the insect, and then what is known as the

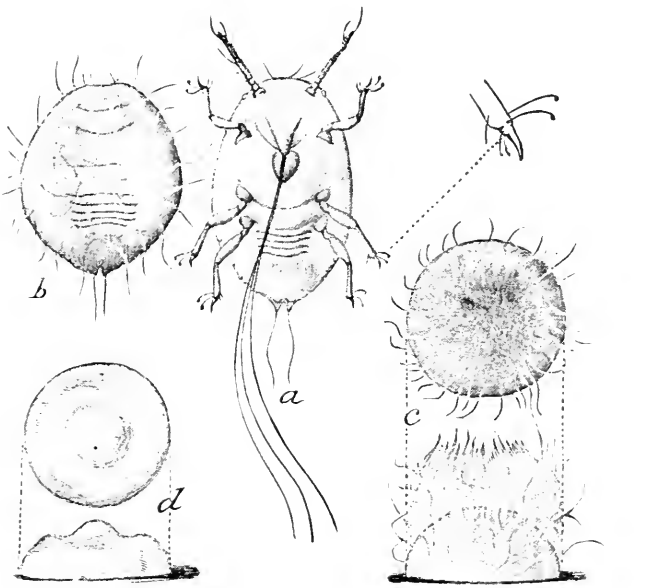


FIG. 5.—Young larvæ and developing scale: *a*, ventral view of larva, showing sucking beak with setea separated, with enlarged tarsal claw at right; *b*, dorsal view of same, somewhat contracted, with the first waxy filaments appearing; *c*, dorsal and lateral views of same, still more contracted, illustrating further development of wax secretion; *d*, later stage of same, dorsal and lateral views, showing matting of wax secretions and first form of young scale—all greatly enlarged. (After Howard and Marlatt, Bulletin 3, new series, Div. Ent. U. S. Dept. Agr.)

scale appears (Fig. 5, *d*) and under the scale the insect itself remains during the period of its existence. The scale is circular in form, usually white at first, and turns them to a yellowish cream color; later on becomes dark or black during the breeding season, and then has a sort of creamy fawn color throughout the season. Briefly, that is the life history of this notorious

pest. All of these facts in connection with the life history of this little insect are most important to every fruit-grower of the present day.

Methods for the control of this pest have been sought and practiced from the very beginning, or since its discovery. We all know that the application of lime, sulphur and salt which proved satisfactory in California has not been so successfully used in the east. Furthermore, the remedy which may be applicable in one section of the east is not necessarily applicable in another section, even in the same state, so we have to bear this point in mind. In south Georgia this last summer I found some enormous orchards which were abandoned largely on account of the attack of this insect. The attack of the insect soon produces a remarkable deadening effect upon the trees. Some of those orchards down there have been completely destroyed, and none of the original trees left. A glance at Figures 6, 7 and 8 will give you some idea of the ruin which follows the track of this pest. Passing a little further to the north, we found a peach orchard of some 40,000 trees, many of which were already dead. In that case we found the

FIG. 6.—Apple tree killed by scale.
By courtesy of "New England Homestead."

entire orchard literally infested with this pest. The scale had been in the orchard for six years. Gradually it worked its way through the entire orchard, until to-day it is of no commercial value whatever. The only proper way to destroy the pest in such a case is to uproot and burn every tree within it. Keep other plants and shrubs off from such territory if it is possible for you to do so. In fact, under no circumstances plant young trees right back in the same ground. Experience has shown that it is the best practice to pull up and burn all the trees found in such a condition.

FIG. 7.—Infested three-year-old pear tree.
By courtesy of "New England Homestead"

I am often asked the question whether or not nature will come to our relief in the reduction of this pest, and give us the best solution of this entire problem. Nature may, perhaps, come to our relief, but, at the same time, while the old farmer or fruit-grower is sitting around his fireplace warming his shins, if he thinks that old Mother Nature is going to come and clean his orchard of the San José scale, you can rest assured that that old fellow is going to get left. We, to a certain extent, can and do rely upon natural agencies in controlling certain conditions. That this is true, has been demonstrated time and time again. But, at the

same time, there is an undue development and dissemination of the insects throughout the United States; and not only this country, but practically we might say the entire world. Here is an insect which has become so thoroughly established that at the present time it has become a factor so important that every

FIG. 8.— Peach orchard dying from San José scale.
(*Cut loaned by courtesy of "New England Homestead."*)

phase of fruit-growing almost must be considered when we consider this question. It may not only involve federal legislation, but international legislation as well. Think for a moment what this pest is costing in the way of quarantines of nursery stock. A foreign quarantine has been established against us, and it is not only keeping our nursery stock, but our fruit from some territories. If we come in at all with trees or fruit it must be subject

to certain rules and restrictions which have been laid down by foreign governments to guard against the introduction of this little pest. If we are going to eradicate it, we must not rely upon natural means. It is a fact that there are a number of parasites which feed upon this scale. It reminds me of the old couplet:

"The little fleas, that do us tease,
Have other fleas to bite 'em,
And these in turn have other fleas,
And so on *ad infinitum*."

At the same time, we cannot apply that philosophy in this case with any degree of satisfaction. While these little fellows

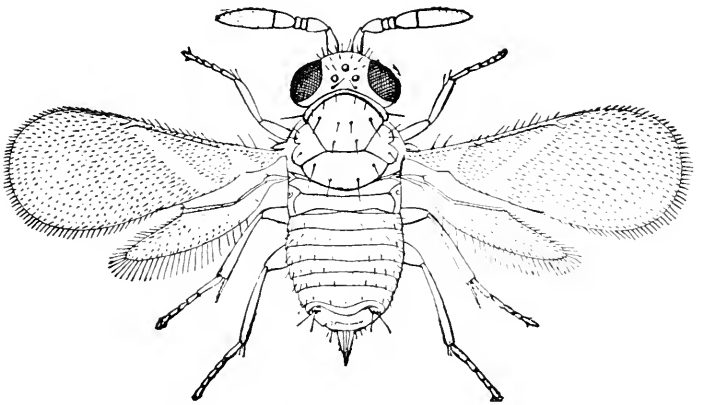


FIG. 9.—True parasite, *Aphelinus diaspidis*, Howard, of the San José scale. (After Howard in Bulletin 3, new series, Div. Ent., U. S. Dept. Agr.)

are scratching the backs of the San José scales, the latter are going on just the same, sucking the life out of our trees. One of these little insects (see Fig. 9) that prey upon the scale penetrates the scale and deposits an egg underneath it. The egg hatches out a worm, which feeds upon the scale and destroys it. Still, while he is destroying one, the old mother scale may have escaped and produced larvæ that will develop five or six hundred. So we have an unequal balance in this particular case, at least, so far as natural enemies of the scale are concerned. I have been studying this question in the south carefully. In California, it is said that the San José district has almost been cleaned of this scale. As a matter of fact, I

have seen that section. You can scarcely find a scale in that region to-day. I couldn't find it. I have some specimens taken from the original region where it was first discovered. While that little parasite is abundant there, and no doubt is a factor in destroying the scale, there are other factors which you must consider. I have been looking for this little fellow in the east for the past five years, but up to last fall I had only five or six specimens secured from districts outside of California. Last fall I found one location in Maryland, and I took some of the infested twigs from the trees back to my laboratory. I found those trees were literally covered with the parasite. In one instance I removed over 1,400 of these parasites (Fig. 9) from a few branches about the size of a lead-pencil. That will give some idea of the concentration of natural forces on these things occasionally. What did I do? Well, I had advised the growers to destroy every tree in that orchard. My advice had been that so long as there was any scale to burn every solitary tree. I had to go back on what I had advised them to do the day previous. It is, of course, our duty to conserve all these natural enemies of the scale, and if we had cut down all those trees we would have burned all those natural enemies. At the same time, by cutting the trees and piling the brush in that orchard, there was no possible danger of the scale spreading. It does not thrive on dead trees, and, as the female does not move, there was no danger. At the same time, such a course would afford an opportunity for these natural enemies to escape and concentrate their forces on trees infested with the scale. So you can see we scientific fellows don't know much, after all. We may tell you one day in positive, unqualified language to do a certain thing — and we do it in all sincerity because we believe it is for your good — but, at the same time, we may telegraph you the next day to do exactly the opposite. That is what we are here for: to work out these things if we can, and give you the benefit of them. So much, then, for these parasites, which are the natural enemies of the scale. We must consider them, but do not lay back on your oars and think that you are going to float to the opposite bank in ease. You are not going to make any money in the orchard business without a fight to take care of it.

There are other factors that enter into this discussion. Several species of lady beetles feed upon the scale, as seen in Fig. 10. Many trees in nature have been practically freed from the scale by a fungus, but experiments have shown that up to the present time we cannot establish with any certainty these fungous diseases in the northern states. We attempted it in Maryland, along the Eastern Shore, but in all cases we

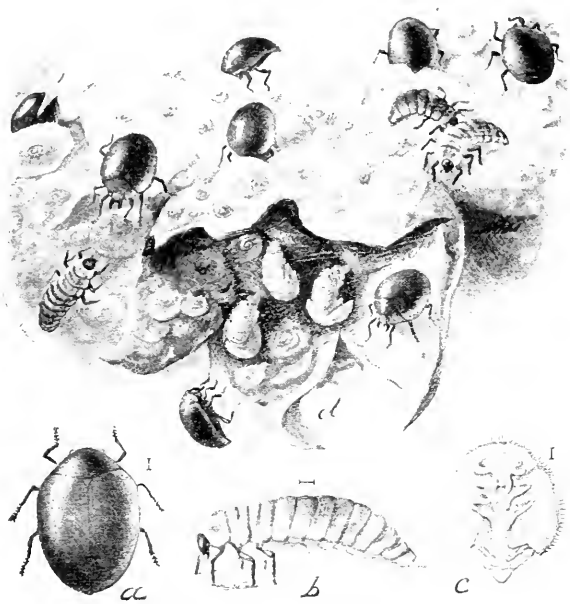


FIG. 10.—The minute, black ladybug, *Pentilia misella*: *a*, beetle; *b*, larva; *c*, pupa; *d*, blossom end of pear, showing scales with larvæ and pupæ of Pentilia, with the former feeding upon them, and the pupæ of Pentilia attached within the calyx—all greatly enlarged. (After Howard and Marlatt, Bulletin 3, new series, Div. Ent., U. S. Dept. Agr.)

failed. We tried to establish it in Illinois, and even in far northern Canada, and in the southern part of Canada, in the fruit belt, but up to this time we have not had any beneficial effect from it.

Now we come down to the real practical side of it. In considering this question we have to take this fact into account, and that is, what will do in Georgia will not do in Connecticut; and what may be applicable in Connecticut for the treatment of one orchard may not answer for another; or be

applicable for one of the orchards which have been developed on top of the Alleghany mountains, where there are some places which have been planted with trees that you can almost sit down by turning around, it is so steep. We must consider that condition. We must study the scale in each of these differing localities. We cannot sit down and be content with studying the life history, but we must get out into the field and observe it under different and varying conditions. The man who is going to be successful against this pest has got to take his coat off and his shirt too, if necessary, and get out and work. Get your coat off, therefore, and get out early in the morning and study the conditions, and work out this problem for yourself so far as you can, and we scientific men will do all we can to help guide the work along effective lines.

Let us go up close to our friend Garfield, and see what they have in Michigan. Fig. 11 shows the system of enclosing the tree in a big canvas tent and destroying the scale by fumigation. At the same time, what could you do with a big canvas tent in an orchard where the trees are planted twenty feet apart and overlap five feet, as is the case in Mr. Morrill's orchard? This will give you an idea of the conditions we have to meet every day. To go a step further, if you go up on the Blue Ridge mountains you will find orchards on ground so hilly and covered with rocks and stones, and so steep that you couldn't even get in among the trees with a team or with any such apparatus. Again, what would you do if you went up on the Alleghany mountains and found an orchard so steep that you could not get in with a wagon? Yet we have to consider all these conditions in providing for effective remedies against this pest. Now let us consider an orchard like one of Mr. Hale's in Georgia. Just as far as the eye can reach, the trees stretch away in a straight row. If the scale should strike into territory such as that, you must bear in mind, it would be a pretty important question of dollars and cents to treat that orchard of over 250,000 trees. On the Eastern Shore of Maryland, one can find as fine orchards as ever grew. At the same time one can walk all over that peninsula and not find a stone big enough to mash a mosquito. Orchards like these present one condition, and orchards like those in the

Blue Ridge and Alleghany regions, where the stones are so thick a man could not get in with a horse, show still another. If any of my friends are going to cultivate orchards in those regions I would advise them to take on a big life insurance, and a good sized accident policy. Then have two or three

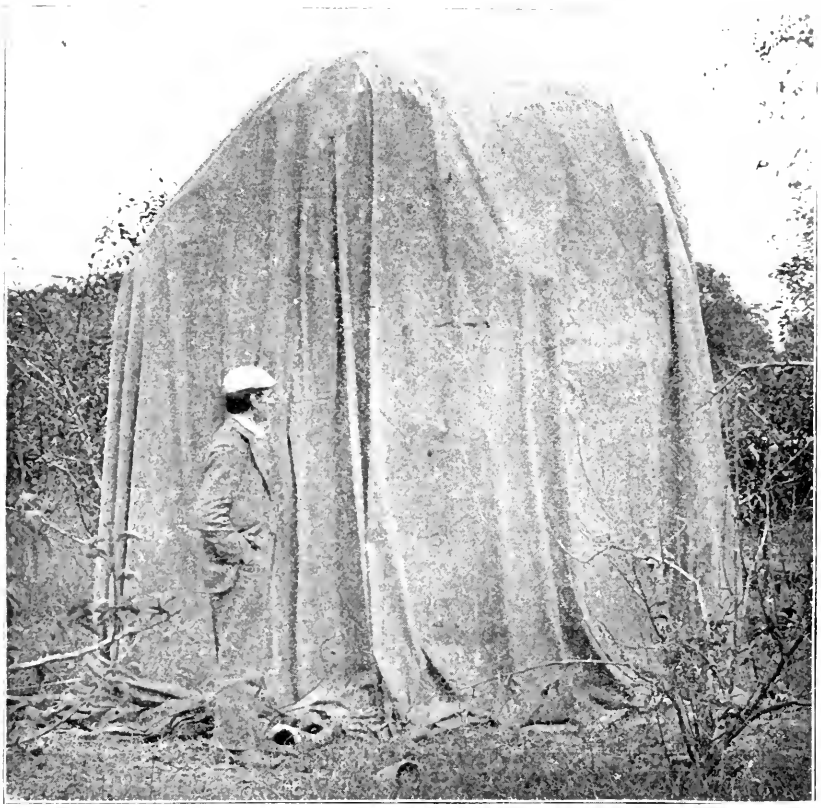


FIG. 11.— A thirty-foot sheet tent covering a sixteen-foot tree. Photograph taken November 6, 1897, by W. G. Johnson.

big kites hitched to you for safety. Yet some of the handsomest fruit grown comes from trees in those regions. The most of that ground has never been cultivated and seems to be wonderfully adapted for fruit growing. You could not spray unless you carried the solution and the pump on your back.

Much has been said about fumigation, and much has been

done by our experiment stations in the fumigation of orchards for the destruction of the scale, but when you have trees of very large size it is a very tedious task to fumigate orchards of that character. I know of an orchard of 5,000 Japanese plums in the heart of the Alleghany mountains infested with scale. In this connection I want to say that the trees came from one of those nurserymen who are so positive that they never have had the scale in their nursery. This man was willing to swear that there had never been one on his place. At the same time he unwittingly was guilty of establishing this scale in the heart of a block of 100,000 trees through the sale of those 5,000 plum trees (Fig. 12) The nurseryman in this case was not responsible, as he would have taken his oath that he did not have the scale on his place. I know him personally as a conscientious, straightforward and reliable business man, but, at the same time, he was guilty of establishing this pest in that enormous plantation where so much money was at stake. Had that nurseryman taken ordinary precautions, he could perhaps have prevented the establishment of the scale in that particular instance. That means that he should have fumigated his stock independent of its condition, and irrespective of his judgment as to the freedom of his particular nursery from the scale. We all make mistakes at times, but in a matter of that kind it is better to be on the safe side. The man who is selling nursery stock nowadays, if he is up to the modern business standard, will fumigate his stock so as to protect his customers and himself.*

Many fumigating houses are being erected. They are composed of a tight gas-chamber, in which the stock is placed and exposed to the fumes of hydrocyanic acid gas. This gas, if breathed, will destroy a human life almost instantly, as it is a deadly poison. I have often talked to the farm hands which we have in these houses in Maryland. In the south they have been obliged to educate the negroes to take charge of these fumigating houses, and I assure you, they do the work very well. I have tried to impress upon them the fact that it was a deadly gas, that they should be careful and not go into the house until it had been thoroughly aired, for if breathed the gas would kill

*A complete guide on the fumigation of orchards, nursery stock, greenhouses, mills, elevators, ships, cars and other enclosures has just been published by Prof. Johnson. It can be gotten from The Orange Judd Co., New York City.

FIG. 12.—Fumigating a large Japan plum orchard.
(Cut loaned by courtesy of "New England Homestead."

them sure. These houses have to be built very tight to prevent the escape of the gas. I know a nurseryman who has a fumigating house that he uses in the spring and fall for fumigating purposes, and uses it through the winter in which to store potatoes to keep them from freezing. These fumigating houses are becoming more frequent in the nursery business, and I dare say the time is coming, as the conditions are so rapidly chang-

FIG. 13. A box tent in position covering a twelve foot tree. Photograph taken November, 6, 1897, by W. G. Johnson.

ing, when every nurseryman who has any respect for himself or his customers will be obliged to fumigate whether he has any scale or not. He will have to do it to protect his own interests.

In some of the large orchards of the south they are experimenting with the tent outfit; that is, by the erection of a large tent, completely enveloping the tree, and then fumigating with the gas for the destruction of this pest as shown in Figs. 13 and 14. I know of one instance where an orchard of

10,000 trees was fumigated successfully. Up to this time this method has not been tested very practically in the east. While it had been used in California, and some of the other Pacific states, but especially in California for this and for other species

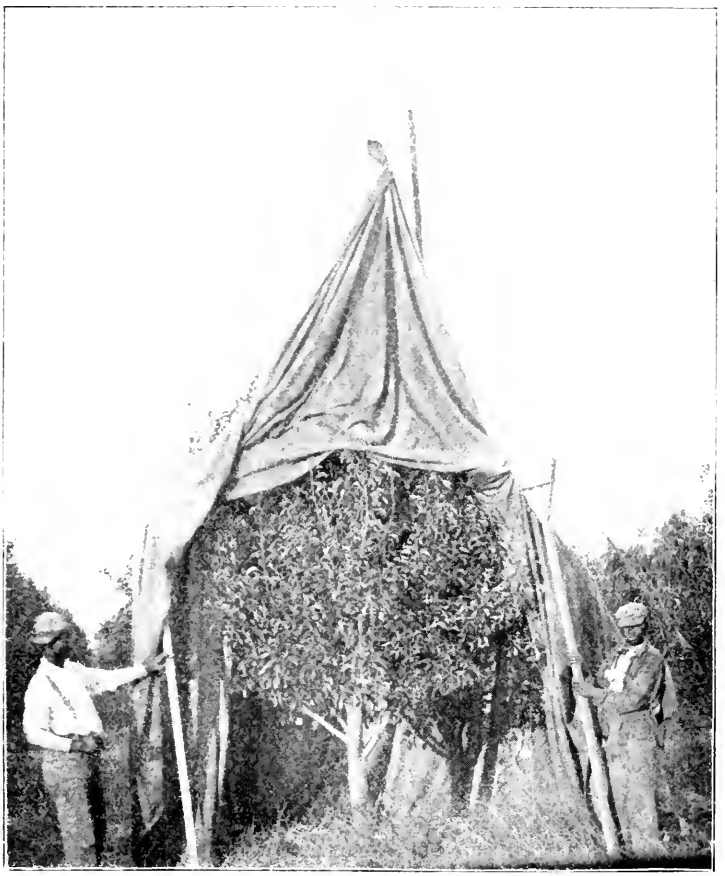


FIG. 14.— Method of removing a tent. Photographed November 6, 1895, by W. G. Johnson.

of this scale which infest the orange trees, it had not been very generally used in other sections until comparatively recently. In California they find it necessary to fumigate in this manner. By the use of enormous tents, they keep their orchards in bearing condition, and as a consequence, are shipping

us lots of good oranges. In erecting these tents it is, of course, necessary to make an estimation of the cubic contents so as to get a tent the right size. The really only valuable part of this system would be the height, and the tent being the exact standard shape it is an easy matter to calculate the cubic contents. Another form of tent is that having what they call an extension hood. In that a big tree 22 to 24 feet in height could be fumigated without difficulty. The sides are all drawn down taut so that the covering is tight over the tree, and then the gas is applied. When this form of apparatus was being developed it was quite a question as to how we were going to get these over the tops of the trees, but a system has been perfected so that even with the enormous box ten feet square at the base, and with the extension hood, we can put it over a tree; raise it, and drop it over the tree in two minutes. It has worked very well. That was not entirely satisfactory, however, so I started on another line this year, making a box tent which I could throw around. It is constructed in sections that are hinged together, and all that is necessary is to slip it around the tree and fasten it, and with the extension hood, pull it over the tree at the top. That worked like a charm, and was satisfactory in every respect. I do not recommend that system, however, except in extreme cases where it is necessary to get over each tree. It was this box system which was used on that orchard of 5,000 plum trees up in the Alleghany Mountains, and it is shown in Fig. 12. There are fourteen of these boxes. This entire orchard of 5,000 trees, besides about 2,000 peach trees, were fumigated, and your esteemed Mr. Hale had the opportunity of being in this orchard at the time. Of course, while one tree is being fumigated preparations can be going forward for fumigating another. In a very short time, the whole operation can be performed and costs less than six cents per tree.

This gives a general idea of the gas method. It is thoroughly satisfactory and thoroughly feasible in all orchards of moderate size. For very large orchards I would advise the utilization of some material other than gas. These materials have been discussed from time to time, and some experiments have been made with whale-oil soap, crude petroleum and

kerosene. Whale-oil soap, while it forms a good remedy when applied at the rate of two pounds to the gallon, yet when it is applied at that rate the peach buds will suffer; so, in peach-growing sections you must discard that method. Refined kerosene diluted with water gives very good results, but the time of the year must be carefully considered, and not only the time of the year, but the place where your orchard is located. In some cases the effect of spraying with 25 per cent kerosene was not so good, but it was due not so much to the proportion of the mixture of oil and water as to mechanical defects in the spray pump. Many trees have been destroyed by this imperfect dissemination of the oil and water. Spraying with a 25 per cent solution of refined kerosene has been very successfully done early. There is a climatic condition entering into this problem. A moist, damp atmosphere is detrimental in every case where you spray with a 25 per cent solution of refined kerosene. So you must bear that in mind. Furthermore, there is a difference in locality, so far as the state of the buds are concerned. These conditions are atmospheric, locality, or geographic, and seasonable. You must consider all of those points,—atmospheric, geographic and seasonable. For example, if you compare the buds from a mountain tree taken on the same day as buds from a tree on the Maryland Eastern Shore, on tide water, you will see a great difference. It would be at least two weeks before the buds of the same variety, or of those two varieties, would be in the same condition. There is a condition which you must consider carefully in spraying every time. From the standpoint of location, after all, the whole thing resolves itself to one problem, and that problem is the man himself.

Put the right kind of a man back of these enterprises of fruit-growing, and the San José scale, or anything else in that line, cannot run him out of the business. He is there to stay. When we find that we can control the San José scale with such material as whale-oil soap, refined kerosene, gas and crude petroleum, the future appears much brighter. It will come back from time to time in all probability, but working with the natural forces which nature has provided, and with the artificial means for its destruction which science has

devised, and with skill and persistence it can be kept under control.

I am perfectly willing to answer any questions which you may wish to ask, but before I come to that there is another phase of the subject, and which may be asked me, which I would like to discuss a little—How does this scale get from tree to tree? That is a question which will require some little time to answer, because there are various ways in which this distribution takes place. One way, and perhaps the greatest factor in the distribution of the pest, is the wind. To give an illustration, I would state that in a badly infested orchard, during the breeding season, you will find twigs and leaves, and sometimes even the fruit, literally covered with this pest. At that time the least little breeze will carry these little midgets from tree to tree, and by actual test we have found that they are sometimes carried eighteen feet. They are carried through the atmosphere very much as particles of dust.

Another way is by means of birds. Visiting from tree to tree they get these insects upon their feathers and feet, and they carry them in their search for other insects. Another important factor in the distribution arises from the insects themselves. Other insects crawling about an infested tree naturally get some of the little scales on them, and in flying among the trees help the distribution in that way. Man himself, working among the trees, is apt to carry the pest from infested trees to other trees upon his clothes. So you must look out for that every time.

The greatest factor in the distribution of the San José scale has been through infested nursery stock. Nurserymen as a class are not the rascals that some people try to make them out. They are as good as some fruit-growers. I have found more rascals among fruit growers than in any other class of people I ever knew. Of course, I don't suppose that is so in Connecticut, but this summer I am going to get acquainted with some of you and find out. But that is a fact, my friends; the nurserymen are not wholly to blame for the distribution of this pest. There have been some instances where nurserymen have put out scale-infested stock, and done it wilfully, but I would blacklist such a man immediately if I knew who he was. At the

same time, there are other men, men who are thoroughly reliable, who have disseminated this pest throughout many orchards unwittingly, and without the least desire to injure you or anybody else. Some of them have not been aware that they had the scale on their stock, and would not have sent out infested stock to the injury of their customers for any consideration if they had known it. Still, there is no question but that the scale has been disseminated very largely by that means.

The crude petroleum question I have not touched upon to any extent. That is still a mooted question. With crude petroleum under certain conditions we have, under our experience up to the present time, a most promising material for the destruction of this pest. If you attempt to use it, however, do not use it full strength. Some of you may say, "Well, I will use 100 per cent because then I will be sure to kill this pest." That sort of philosophy is like that of the old darkey whom we told to use a quarter of a pound of paris green in 25 pounds of flour for killing worms on cabbages. The next time I saw him I asked the old fellow how the mixture worked. He said: "The stuff worked all right, boss. You said if I put on a quarter of a pound it would kill him dead, but I wanted to kill him deader and so I put on half a pound, and I killed every one of the brutes and my cabbages too." That same principle can be applied in the use of crude petroleum. If a 25 per cent solution will kill the scale dead, a 100 per cent solution will not kill him any "deader." Crude petroleum gives promise of becoming a very useful agent for spraying peaches, pears, apples and plums, for the control of the San José scale. Spray with a 25 per cent solution. Begin early in the spring, and spray up to the time when you begin to see the petal, or opening of the buds, and then stop. Don't spray after that time. Bear in mind the atmospheric condition at all times, and avoid spraying on damp, wet days.

QUESTION: "Professor Johnson, will you tell us in a few words what has been accomplished in Maryland through legislation to suppress the scale, and how the growers are satisfied with the results?"

PROFESSOR JOHNSON: "Well, that is a problem in itself.

When it comes to the question of legislation, I do not intend to speak for Connecticut or any other state, but only for the state in which I have been working for the last few years. We have, as some of you know, tackled this problem there from every standpoint, and we have been quite successful up to the present time in the method of operation. We have used gas, kerosene, whale-oil soap, crude petroleum and everything else that has been recommended, including fire and parasites, and we have had very good results. And it has all been brought about by a simple method of legislation. Without a well-regulated law, and public sentiment back of us, we have found it impossible to do anything. Do it effectively and right where you have a problem of this kind to deal with. The Maryland Legislature, two years ago, enacted a law which I had a hand in drafting, which creates a distinct horticultural department in the state government. That bill created the office of state entomologist and state pathologist, gives these men complete power and control of all the nurseries of the state, and gives them the legal right to enter any public property, and condemn, destroy or experiment upon anything from an agricultural or horticultural point of view that in their judgment should be taken in hand. That is the principle upon which Maryland has been operating for two years, and back of that law is public sentiment. Perfect harmony exists between the fruit-raisers, nurserymen and floriculturists, and all interests concerned. Where you have that harmony you have no difficulty at all in enforcing the law. It is left in the hands of the state officers to say whether, in their judgment, a tree has a commercial value. If I should go into Mr. Hale's plantation and find that he had some fungous disease or insect on his trees, or some difficulty which was liable to prove of great damage and detriment to Mr. Miles, just over the fence, I would have the right to dictate to him what he should do, and thereby obtain the protection of his neighbor. In other words, if Mr. Hale refused to cut down and destroy the trees or shrubs on his plantation in accordance with our directions we would have that done upon his place, and he would have to pay the costs. It would be done upon the ground that it was for the protection of other interests, and he would have

to pay the costs in that case. The costs would be collected exactly the same as you would collect taxes. We would say to Mr. Hale, 'You pay this bill.' He would have to pay it. That is all there is to it. In only one case have we been obliged to enforce that requirement by the state. I am glad to say that, as the result of that legislation, where two years ago we had the scale existing in, you might say, 40 per cent of certain orchards in a given region or section, that has been reduced to a minimum of less than 2 per cent. That result has not been due wholly to the effective work of the officers in charge, but to the complete coöperation on the part of the individuals and growers in whose interests this law was enacted. There is a strong public sentiment in favor of it, but at the same time there is this regulation back of this sentiment to protect one man from the indifference of his neighbor. The nurserymen are fumigating their stock under specific regulations in the same manner, and we are having no difficulty whatever."

THE PRESIDENT: "What is the cost of it to the state?"

PROFESSOR JOHNSON: "At the present time the state of Maryland is making an annual appropriation of $8,000 to carry on this work."

QUESTION: "Do you find there that one spraying is sufficient to exterminate the scale?"

PROFESSOR JOHNSON: "No, sir; not as a rule. That is a point about which I neglected to speak. The scale once established in an old orchard is there to stay, so you will be obliged to spray once a year. In cases where the orchard is not badly infested the spraying can be done in sections; that is, spraying different portions of the orchard alternate years. That is the principle on which it is carried on in California in the big orchard districts. I have never known of a case of complete extermination."

QUESTION: "Professor, if we are going to spray with crude oil what specific gravity should we buy, or is there any particular kind of oil we should call for? I believe there are a good many taken in by this so-called crude oil. Now is there any way of getting at it so as to be sure to get the proper kind, so it will not do any damage?"

PROFESSOR JOHNSON: "The oil men use a test. It is an instrument having a scale, and the oil should test on that scale not less than 43 degrees. The higher you go the more expensive it becomes, but it should not test less than 43 degrees. It should range, I think, between 43 and 45 degrees. The oil should not be thick. Some of the oils are yellow or brown, and those should be avoided because they carry a very high percentage of vaseline."

MR. INNIS: "I would like to make a statement. At Bridgeport we have the scale, and lots of it. Being interested in this line and the owner of a particular place being a friend of mine, I had occasion to make a microscopic study of the San José scale in its native haunts. After a thorough examination I said to this friend of mine, 'You cannot do more than kill the tree, and I will tell you what to do. We will use clear kerosene.' That tree was thoroughly drenched from the ground to its tips in the early spring, in March I think it was, with pure kerosene. It was put on on a bright sunshiny, but a considerably windy day, when the air was in motion and everything favorable. That tree the past season bore a good crop of fruit, and is in apparently a good healthy condition so far as I have been able to discover; and I cannot find a living scale on it."

PROFESSOR JOHNSON: "That shows that pure kerosene under those conditions is no more liable to injure the tree than a 25 or 30 per cent solution. I have heard of a good many cases reported where 25 per cent used under unfavorable conditions caused a good deal of damage. At the same time, if the growers will be sufficiently careful about the weather when they spray, and the condition of the trees, experience has shown that 25 per cent is a safe proportion. As I said before, you must work out a good many of these problems for yourselves and not be guided too much by what we fellows say. What may do for Mr. Hale down in South Glastonbury may not do for the fellow right over the fence. There may be a difference in conditions existing in two orchards with only a rail fence between. I have seen that on a single slope of the mountains in the south. We are only throwing out topics for thought for the individual growers to adjust, and to work out for themselves. The best thing is for a man to work out his own case."

QUESTION: "You spoke of the mechanical condition of the pump as being responsible for the damage in some cases. Was that on account of the mechanism of the pump?"

PROFESSOR JOHNSON: "Oil and water are not of the same specific gravity, and as soon as a man lets up on the handle of the pump they tend to separate. If he is using a 25 per cent solution, one-quarter is oil. Now if he lays on the handle fifteen or twenty minutes that quarter of oil will be very apt to come to the top, and the very first plunge he makes with the pump handle he is going to throw almost pure oil. There are pumps upon the market which are being satisfactorily worked. They have done good work for us, and we are using them, but, at the same time, they admit of great improvement yet."

QUESTION: "I would like to inquire if down in Maryland you go right into a citizen's garden and look to see if they have the scale?"

PROFESSOR JOHNSON: "I said that we had the right to do that. In some instances, we have had to go in and pull up all the currant and gooseberry bushes, and even the few little shrubs that some people usually set out. We have been obliged to do it."

MR. HOYT: "What time of the year do you usually make your investigations?"

PROFESSOR JOHNSON: "Any time after the breeding season opens. The breeding season is about from the 1st to the 15th of June, or from the middle of June say until it gets cold. I have seen them breeding up to the 19th of December as far south as Washington, and further south you will find them much later than that. It usually takes several severe frosts before they will stop breeding, and I should say up here in this section you would be apt to find them from June to November."

MR. INNIS: "I found them in Bridgeport breeding as late as the 25th of November this last year."

MR. HOYT: "Any danger of carrying them in your clothes from one place to another?"

PROFESSOR JOHNSON: "Yes, sir. We have one case on record where they were carried five miles on the harness of a horse."

MR. HOYT: "I don't know but we better fumigate our lecturer."

PROFESSOR JOHNSON: "I don't think there will be any danger where there is as much 'gas' as we have here."

Professor Johnson's very instructive address, which by the aid of the stereopticon brought out this important subject most clearly, was greatly appreciated. At the conclusion of the discussion President Merriman announced the following special committee, to act during the meeting:

On the Exhibit of Fruits.—N. S. Platt, New Haven; Charles Black, Hightstown, N. J., and Prof. A. G. Gulley, of Storrs.

On the Implement Exhibit.—J. C. Eddy, Simsbury; J. T. Molumphy, Berlin, and J. Norris Barnes, of Yalesville.

At 5.30 the Society took a recess until the evening session.

EVENING SESSION—FIRST DAY.

Convention called to order at 7.40 P. M., President Merriman in the chair.

"THE PRESIDENT: "Our first speaker this evening will be Prof. W. E. Britton, of the New Haven Experiment Station, who will present a paper upon 'State Legislation Against Fruit Pests: The Situation in Connecticut.'"

STATE LEGISLATION AGAINST FRUIT PESTS: THE SITUATION IN CONNECTICUT.

BY W. E. BRITTON.

On March 5, 1897, a convention assembled at Washington, D. C., "to consider and recommend the most appropriate federal and state legislation for preventing the introduction or diffusion of noxious insects and fungi in the United States." The call for such a meeting was issued by the Ohio State Horticultural Society, which passed a resolution to that effect in February, 1896. The experiment stations and boards and societies of agriculture and horticulture throughout the country responded by sending delegates to the number of forty-six from seventeen states and the District of Columbia. Papers

were read and discussed, and the work of the convention was crystallized in a bill which was drawn up and introduced into Congress, providing for a system of inspection to prevent the introduction into this country of pests now recognized in foreign lands and to prevent the dissemination of pests from one part of the United States to another through interstate commerce. Previous to this time a few states had enacted laws for the protection of their own fruit interests, and it was generally recognized that a national measure would be much more satisfactory in its workings than separate legislation in the different states. The bill, however, failed to pass, not because there was any particular opposition to such a measure, but because it was pushed aside to give time for the consideration of other seemingly more important matters. And so on to this day every Congress has been asked to pass a similar law by the leading horticulturists and entomologists of this country, and twice, if I mistake not, the Committee on Agriculture has reported favorably on the bills, but the Spanish war, our new possessions, the currency question and a hundred other matters seemed of so much greater importance to our national legislators that the time was not long enough to consider and pass a measure which would unquestionably benefit the great and growing fruit interests of the whole United States. But if a national measure could not be procured, state legislation must be enacted, for horticultural interests must be protected; and state legislatures passed laws one after another, each different in scope and methods of execution. The cause of all this attempted legislation, the direct impetus of the whole movement, was the San José scale, which had been brought into the east and distributed over nearly every state on nursery stock. Incidentally, other pests were included in the law.

At the present time laws are in force in twenty-two different states; and in four more bills have already been introduced into the legislatures and are expected to pass soon. (Copies of the laws are on file at the Experiment Station.) In another state, legislation is contemplated, but the movement has not yet taken form. I have prepared a list of states which have enacted laws, also giving the provision for expenses, and the official or board under which the work is carried out.

The following states have horticultural inspection laws :

STATE.	Date of Enactment or Latest Revision.	BOARD OR OFFICIAL CHARGED WITH THE WORK.	PROVISIONS FOR DEFRAYING EXPENSES.
California ...	1897	County Boards of Horticulture.	Per diem salaries and necessary expenses from County funds.
Colorado ..	1897	Professor of Entomology examines and licenses county inspectors appointed by county commissioners.	All expenses borne by the owner.
Delaware ...	1897	Inspector appointed by Governor.	Special appropriation of $300 per annum.
Georgia....	1897	State Entomologist under the direction of the State Board of Entomology.	Special appropriation of $2,500 per annum, $1,500 being for salary of State Entomologist.
Idaho	1897	State Board of Horticultural Inspection.	Special appropriation of $10,500 per annum.
Illinois	1899	State Entomologist	Special appropriation of $4,000 per annum.
Indiana	1899	State Entomologist	Special appropriation of $1,000 per annum.
Iowa	1898	State Entomologist	
Kentucky ...	1897	State Entomologist	Special appropriation of $500 per annum.
Louisiana ...	1897	Agricultural Experiment Station.	Fines to pay expenses.
Maryland ...	1896	State Entomologist	Special appropriation of $8,000 per annum.
Michigan ..	1897	State Board Agriculture	Necessary expenses paid from state treasury.
Montana . .	1899	State Board of Horticulture.	Special appropriation of $3,000 per annum.
New Jersey..	1898	State Entomologist	Special appropriation of $1,000 per annum.
New York...	1898	Commissioner of Agriculture.	Expenses from general Agricultural Fund.
N. Carolina.	1897	Crop Pest Commission...	Special appropriation of $500 per annum.
Ohio.....	1899	Agricultural Experiment Station.	Special appropriation of $7,500 per annum.
Oregon	1895	State Board of Horticulture.	Expenses paid by the court from County funds.
Pennsylvania	1899	Township Boards	Expenses paid by town or city, and amount recovered from owner.
Utah	1894	Appointments made by County Courts.	Expenses paid from County treasury.
Virginia .	1898	Agricultural Experiment Station.	Special appropriation of $1,000 per annum.
Washington .	1897	Commissioner of Horticulture.	Special appropriation of $1,500 per annum.

Alabama, South Carolina, Tennessee and West Virginia will probably pass laws this winter if they have not already done so.

The other states which are now without horticultural pest laws are:

Arkansas,	Massachusetts,	Nevada,	Texas,
Connecticut,	Minnesota,	New Hampshire,	Vermont,
Florida,	Mississippi,	North Dakota,	Wisconsin,
Kansas,	Missouri,	Rhode Island,	Wyoming.
Maine,	Nebraska,	South Dakota,	

It is obvious from the foregoing that a national measure would be more satisfactory as regards uniformity, at least, than the various state laws. Fourteen states have special appropriations, varying from $300 per annum in Delaware to $10,500 a year in Idaho. In several states no special appropriation is made, but the necessary expenses are paid out of the treasury of the state or county. The smallest allowance would seem to be in Louisiana, where the fines after paying fees and costs of prosecution are supposed to cover the expenses.

The methods of carrying out the work are quite different. In some states the law provides only for nursery inspection, while in others orchards as well as nurseries are examined.

Seven states have state entomologists in charge of this inspection work. In some cases the men appointed already held positions at the College or Experiment Station and receive no increase in salary.

Delaware has a state inspector appointed by the Governor.

In three states the State Board of Horticulture, and in one the State Board of Agriculture, are charged with carrying out the provisions of the laws.

New York has a state entomologist, but the law places the work of inspection under the direction of the commissioner of agriculture.

The State Experiment Station is authorized to prosecute the work in each of three different states.

North Carolina has a Crop Pest Commission for the purpose, California has county boards of horticulture, while in Colorado the county commissioners appoint inspectors who are examined and licensed by the professor of entomology in the

State Agricultural College, to make sure that they are competent for the work.

Pennsylvania laws organize the work under township boards, while in Utah the county courts make appointments and draw upon the county treasury to pay expenses.

Connecticut has never legislated against the San José scale, but early in 1893 the Assembly passed a bill creating a Peach Yellows Commission, providing for the inspection of all peach orchards of the state and obliging the owners to destroy the diseased trees which the commission had condemned. The law placed the matter largely under the control of the State Board of Agriculture. The commission was appointed by the Board, and the selection of deputies as well as the regulations under which the work was prosecuted were subject to the ratification and approval of the board.

The law, though not entirely satisfactory in all respects, was probably one of the best laws ever enacted for the purpose. It was repealed in 1897 by a legislature composed of men who believed in economy and retrenchment, especially along agricultural lines. During the four years that the Peach Yellows Commission existed, 1,883,123 trees were examined and 99,714 of them were condemned and presumably destroyed. The total expense to the state for this work was about $18,750, or less than one cent per tree. The proportion of diseased trees as indicated by the number of trees condemned was reduced from 10 per cent in 1893 to 2.8 per cent in 1896. This reduction can fairly be placed to the credit of the legislation and of the Peach Yellows Commission that executed the laws. But it was difficult to obtain competent inspectors in some districts and there was much prejudice against the law on this account, and some pressure was brought to bear upon the legislators for its repeal.

One of the best effects of the Peach Yellows Law was that of educating the people of the state, many of whom were unaware of the existence of such a disease as the "yellows." The same is true of any legislation of like nature. Much information has been disseminated regarding the prevention and spread of human diseases by the work of our boards of health and sewerage commission. But there is even a greater reason

for enacting laws for the suppression of San José scale than for that of peach "yellows." The former pest may attack any kind of a tree, while the latter never occurs except on peach and Japan plum trees.

Let us consider the situation in Connecticut. So many states have passed laws requiring the inspection of nurseries and that a certificate of inspection should accompany each package or shipment, that our own nurserymen found it impossible to ship stock into other states without some sort of a certificate on each package. In the absence of any legislation they applied to the Experiment Station at New Haven, and for four years we have been making inspections and giving certificates. This inspection work has been extremely unsatisfactory in all respects save one — it has answered the requirements of the laws in other states and enabled the nurserymen to ship their stock out of Connecticut. It has done almost nothing to prevent the spread of the scale within our borders. At first the Station bore all the expense for these inspections, but for the past two years we have asked the owners to pay the traveling expenses of the inspector; the Station pays his salary. Under these conditions no attempt could be made to inspect orchards except in a few cases on request of the owners. Several small nurseries were inspected three and four years ago and found badly infested with the San José scale. A certificate was, of course, refused, and a second inspection has never been called for. We had no authority to cause the destruction or treatment of the infested stock, though we strongly advised it, and the owners promised to comply. We have no proof that it ever was destroyed or even sprayed or fumigated, and there was nothing in the world except the nurseryman's conscience (and we hope he had one) to prevent the sale of the stock to unsuspecting purchasers within the boundaries of Connecticut, though he was debarred from shipping it into New York or New Jersey.

In another case a nurseryman wanted his stock examined to see whether or not it was infested with scale. No scale was found, but his peach stock was growing in a bearing orchard of peach trees badly infested with the "yellows." He had obtained and planted pits from the south, where "yellows"

does not occur. Beneath and around the large trees the stock had produced that characteristic sprout growth, showing that within two years from the pit these young trees had not only contracted the disease from the old trees, but that during this time the malady had developed to such an extent that the "yellows" growth had appeared. We had to give a certificate saying that no San José scale had been found, but crossed out the clause relating to other pests. In spite of the good advice which this nurseryman received, there is every reason to believe that the stock, instead of being destroyed, was worked off upon the suffering public.

It has been said that Connecticut may be the dumping-ground for infested stock from other states, but the scale is frequently brought into our state under certificates. Be that as it may, the greatest need of Connecticut fruit-growers at present is for protection from within instead of from without the boundary lines of the state. Connecticut is already a badly infested state. But we must not place all the blame upon the nurserymen. There are cases where infested orchards are located near nurseries and it is next to impossible for the nurseryman to send out clean stock, and in spite of all he can do the source of infection remains. Without doubt we shall soon be obliged to withhold certificates altogether, because the infested areas are fast spreading over the entire state. There are probably hundreds of infested localities which we know nothing about. The mere granting of a certificate to a nurseryman does not prevent the spread of the scale. True, there are cases where a few infested trees have been found in nurseries and the owners destroyed them before the eyes of the inspector. But the certificate benefits the nurseryman more than the buyer because it enables him to do business in the states where inspection laws exist.

It is impossible to inspect stock so thoroughly that you are sure it is free from pests, but one thorough inspection of the orchards and nurseries of the state would give much data about the distribution and spread of the San José scale, that might be of value in determining future action. The present system is totally inadequate to the situation and must soon be abandoned.

Any arrangement that does not provide for the suppression of the scale in orchards and gardens or for the inspection of imported nursery stock at the ports of entry is inadequate and should not be considered. It is a man's misfortune to have the scale brought on to his premises, but it is his fault if he takes no measures to destroy it after he is aware of its presence.

There would be much opposition to the destruction of trees by any official inspector, and it is not safe to leave the treatment wholly to the option of the owner. Perhaps a treatment, either by spraying or fumigation, under the direction of the state official and at the owner's expense would give the best satisfaction. If any orchardist or nurseryman should refuse to comply with either the letter or spirit of the law, or the advice of the inspector, I believe that a wide publication of the fact would do quite as much to further our ends as a prosecution, though, of course, there should be a provision for the vigorous prosecution of all offenders.

Unquestionably a national measure is what we need. A bill is now before Congress, but it will doubtless share the same fate as its predecessors: it is not expected to pass. The various states which have enacted inspection laws are not repealing them, as Connecticut has done. In many cases such laws have been modified, amended or revised, but not repealed. Each year the number of states requiring inspection work grows larger.

Shall Connecticut again enact measures for the suppression of pests? That is for you as fruit-growers and nurserymen to determine. It is not the province of the Experiment Station to take the initiative in this matter. If any legislation is demanded, the demand must come from those who would be most benefited by the measure and whose interests are suffering for the want of it.

If it is your will that inspection laws be enacted in this commonwealth, the Experiment Station will lend you every assistance in its power to best promote the horticultural interests of the state of Connecticut.

THE PRESIDENT: "We are fortunate in having with us this evening our genial friend, Mr. H. W. Collingwood, of 'The

Rural New-Yorker.' I know we shall all enjoy listening to him in addition to our other speakers. I would like to call upon him now."

MR. COLLINGWOOD: "Mr. President: I think about the meanest thing a man can do is to steal another man's talk. I do not want to do that because I know that your program is fully made out. Brother Hale and these other people are just aching to get all the time they can to talk, and I am not going to steal any man's time, and I am going to cut myself off as soon as I can. I don't know much about the apple-growing business, and perhaps not so much as the newspapers pretend sometimes, but I do know this; that a meeting of this kind is not unlike the making up of a paper. The arrangement of the speaking and the general make-up is not unlike a good newspaper. The ideal newspaper has not been printed. If I could get up that I should feel just about right, and I will tell you how I would do it. I would hire the very best men I could in the country to discuss those things that were of living interest in a practical way. I would give 99 per cent of that paper up to those men, and then I would take the remaining 1 per cent, and I would try and get hold of a man who knew nothing about it, and I would have that man write the editorial page. Why? Because it is given to some men to dig facts out of the soil, and out of the great mines of information, and it is given to other men to rub those facts in, and the man, generally, who digs the facts out is not the best man to rub them in. Therefore, I say that while I am not given to digging these facts relative to horticulture out perhaps I can rub them in a little. I went up in Maine awhile ago and attended the Pomological Society. I expected to find a lot of bears roaming around the state, but I found one of the best shows I ever saw. Their display of apples was one of the finest I ever saw. I got to talking with a man from one of their back counties about the exhibit of apples, and he said this: 'My friend, wherever you find farmers that raise a high-grade class of apples there you will find prosperity.' He says, 'I will prove that to you by telling you what happened in our town. We have in our town a poor

farm; and all the paupers and the poor people are taken to this farm. They go and get them. A man with four children notified the selectmen that he could not support his family, so they went with the wagon to take that family; the four children were bundled into the wagon, and the pauper himself went on his bicycle. Now that means that when even the paupers have the means to own and ride bicycles, that was the greatest evidence of prosperity I ever saw.' I agreed with him. I don't believe you can find that outside of New England, and I don't believe you can find that outside of that apple-growing district up in Maine.

"Now just one more rub. Mr. Garfield tells us that in London he found the people eating California peaches. I wonder where it was that the California peach picked up that wonderful flavor they tell about. To my mind it is worse than the Ben Davis apple. I can't understand why a man should want to eat one a second time. I can imagine his eating one; just one, or half a one, but I can't understand where there is a man that should eat two. Where, and how it was that these California peaches picked up that magnificent flavor we hear about I don't know. I wish that he was here so that he could tell us. I would like to know how that was done.

"Mr. Garfield said one more thing which was true. He said that he dug up information, and that he would give it to anybody he could, or anything, to broaden and deepen the respect for our farms and their products. That is true. I have two boys at home, and I have been trying for the last three years to teach them to have respect for the common things on the farm. My own example, apparently, was not strong, so I gave them books, and I gave them Brother Hale's articles in 'The Rural New-Yorker,' but I didn't seem to make much progress until I finally bought a thoroughbred Berkshire pig with a pedigree several miles long, and with hams and shoulders strong enough to bear the pedigree up. I don't know whether it was the pedigree, or what it was, but the idea of handling something which was better than they had ever seen before; the idea of handling something which had blue blood in it, or the idea of handling something which had a pedigree,—it all seemed to appeal to them,—and from that day to this they have

taken better care of my stock, and they have taken more pride in their work, and they have taken better care of everything I have on the farm simply from their association with that Berkshire pig. That is true. I got a letter from a man in this state, and that man told this story. He said: 'My neighbor bought a horse, and he paid $125 for him. He claimed it would do everything but talk. He kept it along and took good care of it, and at the end of eight months he sold that horse for $750, actual figures. He found a man who paid him $750; and that man made $625 on that horse. Now, then,' he says, 'I am ready to pay seventy-five cents for a book on horse-training that will enable me to do the same thing. If you have got a book which you will sell for seventy-five cents, or I might possibly give a dollar, if you have got a book which will tell me how to do that thing. I'll send you seventy-five cents anyway.' I wrote that man that what his friend did when he bought that horse for $125 and sold him for $750 was to take brains right out of his head; he took part of himself, and wrought by his own skill, and put it under the skin of that horse. That is what he did. You can't learn how to do that out of a book for seventy-five cents, or $75, or $750. That is a part of the man. So it is, my friends; every man who sends away from his farm a good peach, or a poor peach, a good apple, or a poor apple, sends a part of himself right along in the basket with that fruit every time. It takes brains to be successful in any line, and you can't get away from it. Good or bad, high-priced or cheap, every package that you send away from your farm contains a part of yourself, and no human being can put on paper so as to show you just how these things are done. You have to associate with them yourself, and dig them out, and rub in the facts you learn so as to make the most of them. The man who is unwilling to do that, who is satisfied to grub along, will soon find his own level. A man with no more pride than that in his work is really to be pitied. What will become of him I don't know, and I don't believe he does himself."

THE PRESIDENT: "In Connecticut we believe in pedigreed stock, and we have here in Connecticut some full-blooded, Yankee pedigreed stock. And I think you will agree with me when I announce the name of a sample of that stock, J. H. Hale, who will now address you."

MR. HALE: "Mr. President, and ladies and gentlemen: I have been asked to speak a little while this evening upon 'Ten Years of Pomological Progress in Our State.' That covers about the life history of this Society, and is of particular interest to us, but as Brother Collingwood says he has stolen so much of my time I perhaps will not say so much, or all I would have said if I had had more time.

"The increased development of interest in fruit culture in Connecticut has unquestionably been greater in the last ten or fifteen years than in all the fifty years that preceded, and especially in the development of finer appreciation of choice fruits, and their care and cultivation. Taking them in their order, the various fruits that we are interested in here in our own state,— taking them in the order of their ripening, the strawberry would come first, but that perhaps has not shown the advance that other fruits have, because in the early nineties, when this Society was organized, we were on the high tide of strawberry culture, and many new growers had just come into the business, and from 1892 to 1895 there was a wonderful increase in strawberry planting in our state, and with it a steady lowering of profits. During those times the strawberry found its way into more homes, and on more days of the week than it ever had before, but with a steady lowering of the profits. They touched about bottom in 1896 and 1897. Since that time I think there has been much less planting of the strawberry for commercial purposes. There has been more in private gardens, but from 1896, 1897, and there on there has been a constant decrease of strawberry planting, commercially speaking, so that it is less to-day, or at least it is not any greater to-day than it was in 1890, and not over half what it was in 1895. The general tendency, of course, is upward, and the rather increased prices which will come to us this coming year will tend to stimulate the over-product which we had in 1895 and 1896. That is a question which we will have to consider, but those with a good field of strawberries have an opportunity for better prices than they have had at any time for six or eight years. The question of varieties has already been touched upon here, but I think it is safe to say that the popular varieties of ten years ago are practically out

of the list now with the exception of the Crescent, which is still well received, and grown by many; the Haverland also. The popular ones of to-day were unknown ten years ago, and probably the ones that are popular now will not be known in ten years from now. The strawberry has a faculty for running out, and there are very few get past the ten-year limit.

"Now as to currants. Within the past ten years, and as early as in the early part of the nineties, there was a greatly increased planting. Up to that time a majority of our currants came from without the state, but many of our planters planted extensively in the state from 1890 to 1895, and there was an abundant production up to a few years ago. Up to two or three years ago there was an abundant supply for the state, and an abundance to ship out of the state; but of late the preserve manufacturers have been putting on the market a fine quality of goods made from this fruit in the way of jellies, etc., and now the general tendency is to do away with canning in the home families, and in our cities, and the result is that it has made a less market for currants, and there is less consumption of currants in the market to-day than there was ten years ago. As Brother Garfield said this afternoon, there is a readjustment going on all the time. I know of some fields that have been pulled up, yet those that care for them will succeed, and are succeeding, in producing some fine fruit of this class. The varieties you know just as well as I do. The only new one of special note is the Wilder, put out by Mr. Willard, of Geneva, N. Y. It is a full, large currant, produces large bunches, but somewhat lighter in color than some of the other varieties. It has a decided advantage, however, especially for family use, in the fact that it remains on the bush for several weeks after it is ripe. It is not so attractive in color, being of a rather pale red color, not so brilliant as some of the others, but on the whole a very good currant.

"Raspberries, especially the red raspberries, have had somewhat of a downfall in the last ten years. There are less of them grown for commercial purposes in the state than there were ten years ago. They have dropped 50 per cent in selling price, and the volume of the demand has also dropped considerably. That is particularly the case with their use for

canning purposes, and is due largely to the great in-rush of southern fruit at that season of the year. Before that set in they used to be one of our main fresh fruits from our native grounds, but now, because of the rush of fruit from the South, flooding all our markets, it has cut off a considerable amount of demand for red raspberries. While many families are appreciating them more and more, and are planting them for private uses, the people at large are not doing that to any great extent, and the result is it affects their production at large. For the black raspberry in some markets there seems to be an increased demand, and I think it is more appreciated in the family and homes than it was. I certainly feel from my own observation that it is being used for cooking more, and I think, perhaps, more bushels of it are sold. We have cut down the number of varieties in both the red and black, so that there are only two or three known as standard. The only new red raspberry in this period is the Loudon. It is rather more hardy than the Cuthbert, more brilliant in color, and more productive.

"In black raspberries we have had the Kansas from the west, and the Cumberland from Pennsylvania. Both are of decided importance, as they are a distinct advance in the vigor of plant, in productiveness, and size of the berry. They are both wonderfully strong growers.

"Blackberries have been even more affected by the incoming of southern fruit, and are less grown than formerly. I believe Brother Butler still grows them largely, but on the whole they are less grown and with less profit than they were ten years ago. The Lucretia dewberry, which is really a blackberry, is being grown somewhat. It is a very early berry of large size and delicious quality. The only new blackberry is the Eldorado, which is a very hardy berry, of delicious quality, and certainly worthy of being planted for family use, but with the general drift away from buying blackberries at the season of the year when we can ripen them in this climate it is a question whether they will be commercially grown to any great extent except by a few growers.

"I want to endorse all that my friend Garfield said about the quality of fruit that is put upon the market, and about our

growers encouraging people to know and understand about fine fruit, to appreciate fine fruit, and thereby stimulating the demand for it. The more people appreciate fine fruit, fruit of high quality and flavor, the more it will stimulate the growers to give it to them if they will pay the price. The more that can be done the better it will be for both the public which buys fruit, and the growers who have it to sell. Southern competition in all these fruits has come, and is with us to stay. The development of through lines of railways, and the consolidation of small local lines into great through lines, which enables them to run fast freight trains under one management from a thousand to fifteen hundred miles in the south to northern markets, and the development of the refrigerator car, has made it possible to lay down southern fruits in our northern markets in almost as bright and fresh a condition as when they are picked. Such a thing was impossible a few years ago, and that is one of the things that has come upon us largely within the last decade which we have got to face and meet. We are not afraid of the competition of the Eastern Shore of Maryland and Delaware, but with this new development in transportation facilities our early strawberry season is seriously affected by the latter end of their crop coming in just about as perfect and fresh from a point five hundred miles away as our own berries will be picked within a short distance of our local markets. As I say, those are conditions which have come upon us very largely within the last ten years. We have to meet those conditions, for they are here to stay. We have to look out sharper, and watch more closely in the future than in the past.

"The culture of the grape has been increased very greatly during the last ten years. The introduction of the Green Mountain by our Brother Hoyt has brought to our state one of the choicest of the early grapes that we have had, and his advertising and pushing of that variety has stimulated the growing and planting of that particular grape so that there has been a substantial increase, and we have more of that delicious fruit among our families and homes than we ever had before. With the Niagara, and the Concord, which covers about the list, there has been an extended planting, not only of those varieties but of a number of others. There has been a considerable planting of

grapes for wine-making by the foreigners who have come to reside among us, notably the French and Italians, and they are furnishing themselves and others with a substantial food product out of our grapes. Those people use a great deal of wine with their meals, and that has led to a demand from that quarter for certain varieties to plant for wine-making. I want to say to Brother Hoyt that those who have tried it tell me that the Green Mountain grape is one of the best grapes for wine-making that has ever been grown in the state of Connecticut. It is on account of its early-ripening qualities and the amount of sugar there is in it. Grape planting and culture is an industry which is certainly on the increase among our growers.

"Japanese plums were almost unknown to us ten years ago. The Abundance, and the Burbank, and those older varieties were known to us then, but practically our entire list was unknown in this state ten years ago. There wasn't a commercial orchard of Japanese plums in our state ten years ago, and there was not, in all probability, five thousand trees on private grounds in this state ten years ago. At the present time I presume there are upwards of a hundred thousand, and there are probably very few private grounds that have fruit trees on them at all but have one or more of the Japanese plums. Their development has furnished a new food supply to our masses throughout the summer season of two or three months. We questioned four or five years ago whether there would be any sale for them. That has been settled. The people have only had to see them and learn about them to buy them. Where plums of good size, beauty and high quality have been put upon the market there has been a steady increase of demand at prices remunerative to the grower, and they are with us to stay as one of our valuable commercial crops. The Abundance is one of the best. The Burbank still holds its reputation as a plum of large size and great beauty of shape. For canning, the Satsuma and the October Purple are superb fruits. Those are some of the most excellent plums covering the season from July to October. The Red June is another variety which is one of the most reliable and is a valuable plum because it comes in so early, but like most of the early varieties is subject to rot. They need the

most severe thinning, and if they are thinned so as to bring them up to size it adds very much to their quality.

"Of peaches, there were less than a hundred thousand trees in our orchards ten years ago, and practically all of them in the hands of half a dozen growers. To-day, without any exact figures, it is safe to say there are nearly three million trees in the state, and not including those on private grounds. Connecticut to-day is regarded as a greater producer of peaches than Delaware. Delaware, twenty years ago was one of the greatest peach-growing states in the Union, but to-day she is not even on a par with Connecticut, for Connecticut is a greater peach-growing state than Delaware. That is a development of the last ten years very largely, and is one of the consequences of the organization of this Society. The old standard varieties of ten years ago are with us yet, and some of the new ones. Probably the one that is being planted the most, and one that will give us great quality, is the Elberta, and some of the newer ones which were under discussion here to-day.

"In pears there has been no increase in planting commercially. Some of the old varieties have been abandoned, and some every much neglected as unprofitable. Probably the Bartlett is paying as good a profit as any of our growers expect under present conditions, with the exception that in a few sections of the state where a few of some of the other varieties have been grown at a profit. The only advance of importance in varieties is the Worden-Seckel. I do not know how many have fruited it. I know a few have. It is a tree of wonderful vigor, and produces a pear fully twice as large as the ordinary well-grown Seckel. Many who have tested them count them fully as good in quality as the Seckel pear themselves. To have a pear which is as good as the old Seckel but with twice the size is certainly a wonderful advantage. If I had any land which was adapted to pear culture at all, which I could spare, I would put out a liberal orchard of Worden-Seckel, for I believe that there is a chance that is worth considering.

"Cherries have been running down in our state not only for the last ten years, but for the last twenty, so that now there are no commercial orchards in our state, and practically no good cherry trees for family supply. They have not seemed

to thrive, but I believe we should encourage their planting, and I believe commercial orchards of large sour cherries would find a ready sale. I believe that it is an industry that has been neglected, and one that needs encouraging.

"The apple we have discussed here to-day. The old-time neglect of the apple tree in our state has gone by. With the advance of this Society, and with the aid of the discussions which took place at our early meetings, there has come a general cleaning up, and more care and attention paid to the old apple trees that were of value and to the culture of new orchards. There has been a general uplifting of the apple industry throughout our state, and particularly within the last five years. There has been considerable planting of commercial orchards of young trees within the last five years. Previous to the last five to eight years you could hardly find an orchard under twenty-five years old. There is a general appreciation and awakening to the fact that Connecticut can be made the land of the big red apple, and it is the land of the good red apple. Our people are waking up to it, and I believe from the feeling that is in the air to-day, and from the word that has gone out all along the line about the advantages to be gained from apple culture in Connecticut, and from general observation the country over, from the apple awakening that is taking place in this state, we shall see some wonderful results. I was talking with one of the most extensive fruit handlers in the east, a man who has made a fortune in handling apples, and who is still in the business, and that man said to me in the presence of another large broker, 'I have got through handling any apples that grow west of the Hudson river. The only good apples grown in America are grown east of the Hudson river.' And that is the gospel truth. The only good apples grown in America are grown east of the Hudson river.

"Now the question of varieties was discussed here this forenoon, as it was with peaches, so I am not going into that.

"There has been a general advance in the last ten years. The idea of better culture in our own apple orchards has come to stay. The idea of growing green crops in our orchards and plowing them under was not thought of ten years

ago. The idea of cover crops was an entirely new thought. It may not have been an entirely new thought, but it has been a new practice in our state within the past ten years. So far as I know, there was not an acre of cow-peas or crimson clover grown in this state for such purposes prior to this general awakening which has come to our horticultural industries in Connecticut within recent years. Now there are hundreds of acres.

"We knew nothing about spraying ten years ago. I presume you will find by looking at our question lists that we used five to eight years ago that the question was continually being asked and continually being brought up, 'What shall I do to prevent disease and scabbing on my fruit?' Some said to put copperas around the tree, and others said to tie a string around, but we did not know that through spraying with the Bordeaux mixture we could smooth up our fruit and make it as beautiful as the smiling face of my friend here. He was not sprayed with Bordeaux mixture, though; he was sprayed with brains. That is the difference. That is another great development that has come within the last ten years that has been of great, yes, almost incalculable, value to the fruit industry.

"We had not thought of grading or labeling our fruit scarcely ten years ago. I believe there was one firm; so far as I know that was the only firm in America that graded and labeled its fruit ten years ago. Now we realize that we cannot sell our products at the best profit unless we grade our fruit, and many of us label it and guarantee its quality and grade. It is not because we have grown any more honest, although I think we have held our own in that respect, and I am not bragging any on that score, but we are doing these things because we have learned that our profits lay there. We are handling our fruit and our products better not because we are more honest but because it is literally and actually more profitable to do it that way. The peach-basket crate was practically unknown to us ten years ago, and see how its use has extended. It is used now for plums and other small fruits. Apple boxes had not been dreamed of ten years ago. Now all progressive growers are studying the question of apple boxes, the right material that they ought to be made of, and

where they can get it, and if they are not already packing their apples into them they are planning to do so.

"The peach yellows, as my friend, the Professor, touched upon awhile ago, we had just begun to think about, and peach yellows legislation, but within ten years we have not only talked about it a great deal, but we got to work and put through a peach yellows law. It was enacted, and put in practice, and found to be a mighty good thing, but it was repealed. Why? Just because there are so many farmers who won't think for themselves. When you want to get any good legislation for this Society, or for the Experiment Station, or for anything that pertains to agriculture or horticulture, in Heaven's name keep the farmers out of the legislature. I am a farmer, and I have been there myself, and I know how it is.

"We are having more competition now than ever before. We are going to have more in every direction. We are going to compete more closely and more sharply among ourselves in the future, as we have increased the prices of our high-grade products, and there is going to be sharper competition in the marketing of those high-grade products. As to some of our other products the prices have lowered from 25 to 75 per cent, and while the prices are going lower the standard which will be demanded of us is being placed higher and higher. I am glad of it, not because it gives some people a chance to run others out, but, gentlemen, the demands of the times are such that in order to produce high-class productions we must use more skill, and better tools, and higher class labor, and that is going to be for the benefit of us all who stay in the business under such conditions. With better tillage we are less and less called upon to furnish plant-food from outside, and upon the whole things are bright. There is a better opportunity for the owner of Connecticut land to-day to make a living out of it than there was ten years ago, and that opportunity has come largely through the work of this Society. There has come a developing of ideas, and a general broadening out which has been of great benefit to us all. Our opportunities are increased but there is more demanded of us. You can't get along with less. There is more work to be done. We have got to act in every particular more with our brains, and more with our

muscles. I read in one paper the other day of a minister being called upon to go to preach to another society at a great advance in salary, and the neighbors heard of it. The minister's boy was playing with a neighbor's boy, and the neighbor's boy said to him, 'Is your Pa going away? What's he going to do? Is he going to accept that call to go to the other church?' And the little fellow says, 'I don't know what Pa is going to do. He's praying over it, but I notice that Ma is packing up. Ma says she is going to get that done.' That is what we have got to do. It's all right to pray, but nevertheless, we must begin and pack up all along the line, and get a move on us from start to finish. And if we do that I believe that the next ten years will see just as great an advance, but it means more brains and less hard work." [Applause.]

MR. IVES: "I remember when our late pomologist, Mr. Augur, was alive, he told me that he didn't know just what was the best thing for black rot. He said that you might just as well cut down the trees. It shows that progress has been made in ten years."

A MEMBER: "I could not help but think when Mr. Hale referred to that Peach Yellows Commission. Ten years ago there were people in this state who did not know there was such a thing as the peach yellows."

MR. HINMAN: "I know something of that peach yellows legislation. Not of the peach yellows itself, but of the peach yellows legislation. After various bills had been submitted I read the bill which was passed. It proved a wonderfully good bill. It was repealed. It was repealed because it cost. Now there may be farmers here, and a good many farmers, but I want to say to you right here that that bill was repealed because it cost, and that was the only reason. I don't know just what the militia of the state of Connecticut costs the state, but somewhere between $150,000 and $200,000, for the protection of the state from mobs. You go and examine the headquarters of the city companies and see! They call them arsenals and armories, but they are the finest club rooms in the state, and the state is paying a big sum of money every year to keep those places up, and the only reason that the peach yellows law was repealed was because there wasn't any money

left, and the suppression of the peach yellows cost money. That is all there was to it.

"Now I happened to grow some very nice Northern Spy apples. They were grown on land that had not been plowed in I don't know how many years. I don't know when the trees were set out. I presume they were grafted, but I don't know when. They never were sprayed; and that ground was mowed year after year, and reduced in fertility, but it was somehow enriched naturally, just as we all admit now that land can be, and I think I grew as good Northern Spy apples on that land as were grown in Connecticut, and it was done without spraying, without plowing, and without any sort of artificial regulation, still they were there. It shows what can be accomplished if you let nature alone occasionally.

"Mr. Hale spoke about cherries. I don't know whether you can make a market for Connecticut cherries or not, but I know that the Connecticut hills will grow cherries, and they will grow most excellent cherries, but like a great many other fruit, they are short-lived, and so far as I know, they are only good for immediate consumption. I don't know of any place where you can grow fruit like the California cherries that can be carried three thousand miles and still be good and fresh, but I can grow cherries on these Connecticut hills that I would a good deal rather have to eat, and I don't know why we can't make a market for them."

At this point the hall was darkened and Prof. W. G. Johnson delivered a very interesting lecture upon "Experiences and Scenes in the Most Remarkable Peach Orchards of America," illustrated with a large number of slides. Professor Johnson took his audience on a most enjoyable trip through the extensive orchards in the mountains of western Maryland and Virginia and by means of lantern slides reproduced the work and methods of those successful mountain fruit-growers.

The lecture was supplemented with views of the Georgia peach orchards of Ex-President Hale at Fort Valley.

[As the many views cannot be reproduced here and since the text of the lecture would not be clear without them we reluctantly omit it.— EDITOR.]

MR. FARNHAM of New Haven: "After Professor Britton's remarks in regard to legislation on the San José scale, I think it

would be well for this Society to think it over, and then prepare some sort of a bill and present it to our present Legislature. After what Brother Hale has said I think perhaps we would not get much support from the farmers, but I think this a little different from the peach yellows. I think that this, applying to persons owning property, ornamental trees as well as nursery stock, I think that if we show to these people that their roses and ornamental shrubbery is going to be destroyed, and even our forest trees harmed, as Professor Johnson suggested, it would make an impression upon our Legislature so that we might make some arrangement to have a suitable law passed for our protection."

THE PRESIDENT: "I think that is a very wise suggestion. We are now to have a talk by a representative of the Horticultural Division of the Pan-American Exposition, Mr. William Scott, Buffalo."

MR. SCOTT: "Mr. President, ladies and gentlemen: Your program announces that there will be a representative of the Pan-American Horticultural Division to address you. It was the intention to have Professor Van Deman, who is connected with the Agricultural Department at Washington, here to speak to you, as he is the special representative of the Pan-American Exposition for the purpose of collecting exhibits. In his absence Professor Taylor, who is an expert pomologist, intended to be here, but he was unable to come, and at the last moment they sent for me.

"Now I do profess to be a floriculturist but not a pomologist, so you will see that I am here in quite a different status from either of the others whom I have referred to. I am not aware how much you know of this very great undertaking which has been started at Buffalo, and nearly carried through to completion. When I say 'completion,' it is practically completed, for all of the buildings are under cover, and it is assured that the Pan-American will be opened to the Public on the 1st of May. It is an undertaking which will cost upwards of ten millions of dollars. The buildings and the general plans are upon a different line from what they were at the World's Fair at Chicago, and I have been told repeatedly, even by Chicago men, and you know Chicago men do not like to

admit that they are beaten,—but I have been told by Chicago men that we have beaten the World's Fair. The Manufacturing and Liberal Arts building covers about five acres, and Machinery Hall covers about five acres. The Temple of Music which, architecturallly, is one of the finest structures ever built for that particular purpose in the world, covers about an acre. There are many other buildings, and things that I might say to you about it, but time does not permit. Horticulture has received the place of honor. It is situated just west of the United States building, and in front of each wing is what are known as the 'Fountain Gardens,' 500 feet long, in which there is to be a wonderful display of lilies. Another feature will be very striking to you. You will remember at the World's Fair every building was white, and the architects objected to any color being on the ground any different, and with the exception of a few beds in front of the Horticultural Building the grounds were destitute of any color, except, of course, as given by the different landscape features of the World's Fair. Here it is entirely different. The coloring of the buildings is one of the most beautiful features of the whole scheme. The Horticultural building is one of the grandest that was ever built to receive the exhibits of that noble industry, and particularly pomology. From the two northwest and southwest corners of the main Horticultural Hall are two wings, each covering a little more than an acre, and having 24,000 feet of floor space. These wings are to be used as conservatories, and they will be held specially for flower shows. In their different seasons there will be special shows of carnations, dahlias, etc., as they come along in their season. There are also about twenty-five acres laid out near the Horticultural Hall which will be entirely devoted to horticultural exhibits. It may not be worth your while to go to see the special displays of fruit, or the special displays of the curious things of horticulture, but it will be worth two thousand miles of travel to see the Pan-American in its whole beauty."

Mr. Scott read from a list giving the amount of floor space that different states of the Union, and different countries had made application for in the horticultural section, and Professor

Gulley announced that Connecticut had made application for 400 feet.

The secretary called attention to the usual custom of the Society in appointing a Committee on Nominations for the annual election of officers. On motion it was voted that the chair appoint a committee to select names of officers to be voted for at to-morrow's election.

President Merriman named as the committee: Prof. W. E. Britton, E. M. Ives, N. H. Sherwood, Orrin Gilbert, and A. C. Sternberg.

At ten o'clock, after one of the pleasantest and best attended evening meetings in the history of the Society, an adjournment was taken until the following day.

SECOND DAY, THURSDAY, FEBRUARY 7

MORNING SESSION

The second day of the meeting opened with an increased attendance, the main hall as well as the adjoining rooms being filled to overflowing.

President Merriman called to order at 9.45, and as the first business of the morning presented the contents of the question box for discussion.

"How can peach trees 5 years old, which are of a worthless variety, be budded profitably, or so as to be of valuable worth? Can you cut them off, and would you cut off from the sprout up?"

MR. HALE: "Unquestionably they can, yes, sir. I should never think of pulling them up. Some time in March, or after the cold weather is over, and before the growth begins I would shear them back very closely indeed. Say we start with the three or four main branches, and a foot or two further up I would cut those secondary branches back to within one or two buds of the main branch. I would perhaps leave one of the central branches to grow, but a little later I would cut the central one out. I think if one would cut last year's wood of the kind they wanted it would be better."

QUESTION: "Which is the best up-to-date book on fruit culture, and what is the cost?"

MR. HALE: "The 'Cyclopedia of Horticulture,' when it comes out. Two volumes are already out, and there are two more to be finished between now and July. That will be the best fruit book in America. Of course, the reports of the proceedings of the Connecticut Pomological Society are not to be sneezed at either."

A MEMBER: "Who is the author of that Cyclopedia?"

MR. HALE: "Professor Bailey."

QUESTION: "Which is the best all-round apple,—the Baldwin or Sutton Beauty?"

THE PRESIDENT: "We discussed that before. The Baldwin, of course."

THE SECRETARY: "I think the gentleman from Vernon who asked that question about Fruit books wanted to know whether or not it would be possible for members of our Society, on orders for such books, to get a reduction?"

MR. BUTLER: "In regard to the question of a reduction on that new book on fruit culture I would say, as it is only half published, the only way it would be possible to make a reduction would be for some man representing some of the members of the Society to get up a subscription, and then withdraw his commission."

QUESTION: "Which are the six best peaches to plant for commercial orchards in order to cover the season?"

MR. HALE: "It depends upon the man, depends upon the location and it depends upon the kind of a farm you have got. There are no six best varieties for all purposes. It depends upon the market you are going to supply, for one thing. Some markets want 75 to 80 per cent of white fruit and only 25 per cent of yellow, and there are other markets that want the reverse. And some markets will take about three times as much yellow fruit as they will white. I don't know as there is any best about it. You have to plant for the conditions which you have to meet."

QUESTION: "Is it safe to set peach trees on land from which trees affected with the yellows have been removed?"

MR. HALE: "For Connecticut, I say, no sir. My experi-

ence in Connecticut does not make me want to put healthy trees where those affected with the yellows have been taken out."

A MEMBER: "I did it last spring on land where I had removed all the trees that were affected."

PROFESSOR GULLEY: "I don't believe in Mr. Hale's theory. We have them right in the spot where we pulled sick trees out."

MR. COLLINGWOOD: "I would like to ask what Mr. Hale's experience has been?"

MR. HALE: "Some eight or nine years ago we had a field of nearly an acre that was badly infested with the yellows. The trees were eight or nine years old. While they were not all infested with the yellows, and a considerable over half of them were thrifty, I pulled up the whole field. After the fruit crop was off in September I plowed the ground, and early in December the same field was cross-plowed. I was in Georgia during December and January, but came home, and I looked at it, and I said 'I guess we can plow that field again.' It was plowed the third time in January. In the spring it was plowed and harrowed or bushed, and as it was right in a spot that I wanted to utilize, and as Professor Gulley's doctrine had been preached by some people, I thought I would try it. I brought from the south a lot of peach trees which were grown there, and which were supposed to be healthy, and we took two thousand of them and planted them on new land, and we took enough to set this small block of about two hundred trees, and set it out again. They grew well, but by the middle of August there was plain evidence that something was the matter, and by October the sprout was plainly to be seen, and a gentleman who came to visit us, who was an expert in such matters, pronounced it a plain case of the yellows. The trees we set on the new land have never shown it yet. That convinced me, from that experiment, so that I do not want to plant any more on ground where the trees on it have had the yellows."

PROFESSOR M. B. WAITE: "I have seen peach trees in precisely the way that Mr. Hale describes, but the trouble was something else, not the yellows. The only absolutely positive proof of the yellows is premature spotted fruit."

MR. HALE: "Now, gentlemen, don't you believe him. If you do you will get into trouble."

PROFESSOR WAITE: "I will give you what my experience is, and why we accept as negative evidence only cases of this sort where there are other symptoms than the premature spotted fruits. In other words, you may have the sprout, and the yellow-colored foliage, but all those symptoms are symptoms which may be caused by other influences than the yellows, and the premature spotted fruit is the only symptom that can be absolutely relied upon. Therefore, we cannot accept any other symptoms as absolutely conclusive."

MR. HALE: "You say that these systems are brought about by some other cause. Did you ever see what we know as the 'pennyroyal sprout,' a sprout growth which is one of the evidences of the yellows? Did you ever see that on a tree that hadn't also colored its fruit prematurely?"

PROFESSOR WAITE: "Yes, sir; in a number of instances."

MR. HALE: "Where?"

PROFESSOR WAITE: "I suppose I have seen a thousand cases of that sort in Michigan this last summer."

MR. HALE: "And it was not the yellows?"

PROFESSOR WAITE: "It was not the yellows. It was a trouble which is often caused by lice. You must remember that the peach yellows, unfortunately, is one of those diseases that we know only by symptoms. We do not know its cause. The only clue we have is indicated by a certain set of symptoms, and of those symptoms I am perfectly sure there is one that is absolutely reliable. Those symptoms that Mr. Hale mentions are good symptoms, but they are not conclusive. Premature fruit itself is not a conclusive proof. You can have premature fruit without having the yellows, but the fruit is not spotted. There are different kinds of premature fruit, and you have to know the difference. A great many trees two years ago were very premature, and although the fruit was from three days to a week or ten days ahead of time it was not the yellows."

MR. HALE: "Well, you can tell it, but I don't believe it."

THE PRESIDENT: "I was satisfied when the gentleman spoke that it was not in Connecticut that he saw those trees or those symptoms. I never saw those sprouts but that the tree would develop the yellows. I never saw the pennyroyal sprouts,

where the tree gave the general symptoms that Mr. Hale speaks of but it would develop the yellows."

PROFESSOR WAITE: "There is a very common characteristic yellow sprout that grows rapidly in the nursery. It grows only in a certain season. When a little rainy spell comes in September to start them into growth, and the top being checked by this disease so that they cannot keep on pushing, there will be anywhere from one to three or four, and in some cases a dozen of those peculiar little sprouts right around. Haven't you all seen that?"

THE PRESIDENT: "I have, but I mean pennyroyal sprouts."

MR. HOLMES: "I don't believe the gentleman can convince any one present that in Connecticut those pennyroyal sprouts are not conclusive of yellows. I had occasion to examine from fifty to eighty thousand trees last summer, and I had especial reference to that question, whether it would do to plant trees on land where others had died with the yellows, and I never yet saw a healthy orchard of trees raised upon such land. There may be an exception, but in all my experience I have never seen it. This last summer I examined over eighty thousand trees. A great many of them set on land where other trees have been affected, and I always found if an old orchard had the yellows the young trees would die just as quickly as the old ones. What happened in Michigan I don't know, but I am sure that the gentleman is preaching heresy here to Connecticut fruit-growers."

QUESTION: "Is there any encouragement to plant commercial vineyards in Connecticut, and if so, of what variety?"

MR. HALE: "The growing number of citizens of foreign residence or birth living in our cities and villages who have always used the juice of the grape as one of their staple food supplies has created a great demand for grapes for wine-making. The supply has been inadequate here, and they now buy in large quantities, and at cheaper rates in New York, Ohio and Pennsylvania. These grapes come in bulk, either in bushel boxes, or some such shape. Car-loads of them are coming into our state, and they are being purchased at prices ranging from $25 to $40 a ton. There is a large market for grapes in that way. If we can grow finer bunches of grapes, so as to meet

the competition of our brother growers in other states, there is no doubt a good business awaiting us in that line. I believe that we have acres of land that grapes like the Niagara and the Concord can be grown on at moderate cost, and I believe that they will find such a ready market at home that it will make them profitable grapes to be grown for that purpose. I think it is a good business opening for us."

THE PRESIDENT: "I would say that I had three or four acres of grapes this last year, and practically supplied the New Britain market with grapes. They all pronounced them the best in the market. There was a car-load of western grapes came in there, but they had to send them out because they could not sell them."

MR. HALE: "Were they sold at a fair profit to yourself?"

THE PRESIDENT: "Yes."

MR. A. BERNHARD: "Mr. Hale is right when he states that in late years grape-growing has experienced much change, so that you will find a ready market for the kind he speaks about. I think it is to our advantage though, instead of planting our common varieties like the Concord and the Niagara, and others like them, to start in with varieties which would make better juice, and obtain a higher price on the market. In New York state they have varieties which run up to $60 and even $100 a ton, and they have one that they get as much as $175 a ton for. If we can grow some of those varieties our grapes will bring us in a good deal more money."

THE PRESIDENT: "We will close this discussion now, and will have a lantern slide exhibition and lecture by Prof. M. B. Waite, Department of Agriculture, Washington, D. C., on "Some Diseases of Orchard Fruits."

SOME DISEASES OF ORCHARD FRUITS

PROFESSOR M. B. WAITE

Mr. President, Ladies and Gentlemen:

The first trouble I will call your attention to is the peach yellows again. This tree in the photograph is a Delaware peach tree, and has one of the first symptoms of the yellows that appear,— this pushing sprout. It shows very little in the

photograph, but the other slides will show it better, and also give you an idea of the more definite stages of the yellows. These sprouts are one of the first symptoms to appear, and while we cannot always rely upon the sprouts as a perfectly satisfactory symptom, or as a conclusive symptom rather, they are a strong indication of that disease, especially if accompanied by other symptoms later. The little discussion that we had a few moments ago perhaps needs some qualification. What I referred to, and what I should have said, perhaps, to be more definite, was that just a little of the growth is not necessarily conclusive. The first tendency of it must not be taken for the yellows. I wish to say this in order to make the subject clear; the probabilities are very strong, when you find those sprouts, that the tree is diseased, but I claim that the symptom is not absolutely reliable for experimental purposes, and you must be very careful. I would insist upon seeing the premature spotted fruit before being absolutely certain, but in ordinary practical work these sprouts should always be good ground for condemning the tree, as they are good evidence that the tree is diseased.

This slide represents a Michigan peach tree with the first symptoms of the yellows. It is a tree I photographed last summer, and while it looks perfectly normal and healthy it had a large proportion of premature fruit, and, of course, that is a condition in which the tree should be condemned and pulled out. No tree should be allowed to get into that stage.

Now, the peach yellows is a peculiar disease. It is one of those diseases of which we do not know the cause, but of which the remedy is well known, and better known than is the case with a great many plant diseases. That is a phenomenal condition of affairs. No investigator has ever been able to make out the parasite which causes the peach yellows. It behaves exactly like a contagious disease, and there seems to be but little doubt that it will be found out some time to be that kind of a disease. So far as orchard work is concerned, it is an easy disease to fight. It is the same method that is used in fighting the smallpox, with just this difference. We cannot burn up a man with the smallpox when we catch him, but we can a peach tree, and stop the contagion.

The peach has another very peculiar disease, the peach

rust. The peach rust, in the south, takes the place of the peach yellows. Fortunately for the southern peach-grower, the rust has never shown a tendency to spread and wipe out the peach orchards in the manner that the yellows has in the north. It is almost a curiosity in the great commercial peach orchards of Georgia. We have to hunt for it before we can find a satisfactory subject to photograph. It is more apt to be found in some tree along the roadside, but it does in one single season what the yellows take two or three, or even five years to do. It kills the tree at once.

The peach is also affected by another curious disease called the 'little peach.' It is a disease which, up to the present time, is very little known outside of the state of Michigan, but there, in a few localities, it has shown a very destructive tendency. I will go over with it so that you may get acquainted with it; so that if it should appear here you may recognize it. The most striking feature of the disease is the small size of the fruit. A tree in a well-cultivated and a well-cared-for orchard may be noticed to have fruit that is from one- to two-thirds normal size, and as the fruit comes on it is belated in ripening all the way from a day or two to a week. In some cases it is a month behind time. The fruit of such a tree is not a healthy fruit. The fruit is small in size, and entirely abnormal in that respect when compared to a healthy peach from an unaffected tree. The foliage is small, as well as the fruit. This disease has had a very destructive effect upon the orchards in the state of Michigan. At present it seems to be confined to a certain diseased area. It appeared two years or more ago, and the next year had spread to larger trees, as you see by the photograph. The season these photographs were taken it had spread still further through the tops. This picture shows another orchard in Michigan in which the 'little peach' is at work. By casual observation you can see on the branches the character and growth of the disease.

Now I want to give you a little idea of the way we went at this disease for investigation purposes. Of course, in this state, it being an entirely unknown disease, we made up our minds that we must study the disease from the tips of the leaves to the end of the roots; study it from one end to the other. This

photograph will show you. I am afraid the little peach is going to spread, and prove destructive.

The brown rot: this disease is caused by a fungus. It is a disease which was very destructive during the past season. The Georgia peach-growers had a very bad, rainy spell of weather during the very period when the peaches were ripening, and it caused immense destruction. As the season advanced northward the Michigan peaches began to rot, and they were affected in the same way. They had rain and rain right through the ripening season, and the result was that it affected them seriously, and whole varieties went for nothing. This last year, in far the greater part of the area of the Michigan peach belt, the crop was a total failure. In many cases I saw growers feeding green fruit in order to avoid the loss occasioned by the fungus running from the fruit into the trees. This fungus disease is probably preventable by spraying. It is difficult to do so, however. Several years ago the Delaware Station conducted some experiments in which they demonstrated the success of spraying, but the chief difficulty is in applying it.

Another very curious trouble in the peach orchard has been the cause of winter-kill. Here is a photograph of a tree all broken down while weighted with fruit because of having a defective heart.

Now, going from the peach to other fruits, I have here a portrait of the pear blight. That is an actual photograph. The photograph was made from a microscopic enlargement, and then the slide was made from that. The pear blight is an old customer, and a subject that I hardly like to say much about, as there has been so much said and written on that subject, but, at the same time, many of you are interested in the matter. This photograph represents a twig showing the progress of the disease. The disease has run down here and stopped at this point. If, at the close of the season, in October and November, the disease is still active, such cases survive the winter to start another year. The great point is to get rid of these hold-over cases. If we can corner it there, and prevent it doing work in the fall and early spring, we can entirely eliminate it from the orchard. In the spring, when the sap flows readily, the hold-over blight increases in activity, and the gum exuded runs down

the bark, where it comes in contact with various insects who become infected by the gummy substance, and they carry that infection in that way. In the center of the blossom there is a little disk in which the egg is carried. The germs multiply and spread into the blossom, and so on into the fruit, and down into the tree. Most people are afraid to cut a pear tree when it is afflicted with the blight, and if the trees are treated properly perhaps they are justified, as this next slide will show you a photograph of a tree with the top almost ruined, and yet it recovered. The recuperative powers of pear trees are great. In the treatment of pear blight there are several other things which can be done besides cutting down the tree, but these things all relate to orchard management, and it can all be summed up by saying that pear trees, which are in a tarry condition, can best resist, and any other method which will tend to starve the trees will notably reduce the blight. That is an unfortunate thing, and I do not, as a general thing, believe in it, but oftentimes pear trees can be saved by some such treatment. To illustrate, when the disease had started on a tree in a pot, the pot was dried out. Another pot was watered daily in the usual way, and, of course, the blight kept on growing and killed the tree, but on the other tree the blight was checked at the very point where it was when the water was withheld.

Both the apple and the pear have what is called the apple and the pear scab. I imagine those diseases have been considerably talked about here also. The picture on the screen will show you the typical appearance of the badly diseased fruit. The scab, as you all know, is preventable by spraying. The best time to spray for the scab is the only question, and, of course, that is worth considering at the present time, but I do not consider it necessary for me to go into details. It is more a question of how and when to spray. Both the pear and apple scab should be sprayed for when the clusters are opening out, but when the individual flower-buds are closed,— perhaps about May 1.

One of the worst diseases of the apple along this southern area of cultivation is the bitter rot. That is a disease which does not occur, or at least, if it occurs in Connecticut it does not do any serious damage. The bitter rot was by far the

most serious disease in Missouri, parts of Kansas, southern Illinois and Canada this past season. It is caused by a fungus. It is a fungus that does most of its work in the summer, although it does occur earlier in the season. It is a difficult disease to spray. It is encouraged by dry, hot weather rather than by cold, moist weather as the scab is. The bitter rot is caused by a fungus very similar to the black-rot fungus. The bitter rot is on that same general type. The black rot, of course, as is generally known, is one of the easiest diseases to prevent by spraying.

Through New York and New England many of our fine old apple trees become affected with a disease on the body and main limbs looking something like the pear blight, but it is not the pear blight. A little white fungus appears. It is one of the higher fungi. It very quickly appears, and it was supposed to be the cause of the disease, but it is now thought probably to be more like the bitter rot of the apple.

Apple canker occurs in some of its forms in the nursery. Nearly all that type of diseases can be prevented by winter spraying. Very likely it would be a wise thing, anyway. In order to show the wonderful effect of spraying upon some of these diseases it is only necessary to show you the views of some trees that were sprayed for the pear-leaf blight. Trees which had only been sprayed twice retained their foliage, while those which have no such care sometimes lose their foliage by the middle of July. The pear-leaf blight forms one of the best means of illustration of the effect of spraying, as it shows one of the finest examples of the prevention of injury where the spraying is well done. It is one of the most effective remedies in use for the treatment of fungous diseases, and, by the way, I want to say that we look to Connecticut for some of the best experiments which have been carried on in the treatment of these troubles. I was going to say a few words about the theory of spraying, but I am afraid that is one of the things which is so familiar to you in Connecticut that it has become stale. It is a thing which I suppose has been drummed into you so much that it has become a "chestnut," but, at the risk of boring you perhaps, I can show you some views of different forms or types of spraying apparatus. The

barrel sprayer, such as you see in the photograph, is perhaps more used and better known than any other which can be used for spraying. This particular apparatus is perhaps defective, however, in that it has no extension rod on the end of the hose. That is a valuable appliance, and makes the apparatus more effective. A very interesting form of apparatus is that for use from a wagon. The apparatus is so arranged that the man simply drives the horse along by the rows of trees, and the spraying apparatus shoots the solution into the trees as he passes along. In cases where there are very large orchards to be sprayed that form is perhaps useful, but it results in a very hasty spraying. It is better than nothing, however. A more finished form of apparatus, and one which is used to spray four rows of peaches, strawberries, or whatever is necessary to employ it on, consists of the ordinary barrel form with four lines of hose mounted in the wagon, and connected with gas-pipe connections, two stretching out on one side and two on the other, so that, by driving along, four rows can be showered at the same time. The principal cost of the operation of such apparatus is in the labor. For such an apparatus as that the labor costs probably two or three times as much as in the simpler forms, but probably the work is accomplished much quicker. If anything can be done to cheapen the cost of the labor it would be a very good apparatus.

One of the best, and one of the most efficient forms of apparatus for use on large orchard trees that I have seen, consists of an apparatus which enables you to reach into the tops of the big apple and other trees. On the sides of the tank is built up a platform raised some five or six feet above the ground, so that the man who is operating the spraying nozzle stands some ten feet over the ground, and, with a good long arm or ten foot extension, he can reach right out into the tops, and throw the spray to good advantage.

THE PRESIDENT: "How do you spray for black-rot on grapes?"

PROFESSOR WAITE: "If the vineyard has not been sprayed before it is usually best to spray before the buds flower. Some

spray when they are in bud, and just after they are in blossom. Whether that is best is a question which has been discussed a good deal. As a matter of fact, it is hardly going to make much difference whether it is just before or just after, but after that it is put on at intervals of ten days. The black rot is not always easy to prevent. It is sometimes affected by the weather. About five sprayings, at intervals of ten days or two weeks when the vines are in blossom, is usually very helpful. The grape is not hurt by the normal Bordeaux."

A MEMBER: "Do you have any trouble in making the Bordeaux adhere?"

PROFESSOR WAITE: "There should not be any trouble with the right kind of spraying. If any of you do have any trouble with pear leaves, for example, I will give you a simple remedy for that trouble. Use a high pressure pump, make the solution thin, and go through the orchard very rapidly, just giving it the finest kind of spray. Let it dry, and then go back and spray over it again. Where the particles have failed to go the first time it will stick the second time. When you wish to make a really good job of it, try double spraying."

SECRETARY MILES: "Has anything been found superior to Bordeaux mixture for spraying?"

PROFESSOR WAITE: "In a general way, I should say not. The efficiency of the Bordeaux mixture, however, depends on a number of different factors,— on the copper compound that is in it, and it also depends on the cementing power of the gypsum which remains in the solution as a residual product of the decomposition. When you mix copper hydrate with lime the soda which is in the lime makes lime sulphate. Sulphate of lime is different. Now, a part of that remains in the solution, and the mixture is a saturated solution of gypsum. Now when we spray that on the trees, that saturated solution of gypsum becomes a cement which fixes the Bordeaux on the leaf, becomes insoluble in water, and this sticking power of the Bordeaux depends on the cementing action of the gypsum solution."

MR. IVES: "In your observation, where Bordeaux was applied very thoroughly to apple trees, did it rust the fruit

to some extent, or cause irritation of the surface of the fruit?"

PROFESSOR WAITE: "That depends on the Bordeaux. Proper Bordeaux will not do that."

MR. IVES: "Do you use four pounds, or six?"

PROFESSOR WAITE: "Four pounds is all right."

MR. IVES: "I have observed in my use that it does rust some, and I have been wondering whether the Bordeaux was all right. It was the very finest whitewash lime, very fine, and apparently all right."

MR. ROGERS: "I would like to ask the Professor a question that may be right on that line. I saw something this last fall which may help that a little. I never saw it before. The leaves of the trees had a bluish look. They were apparently healthy trees with bluish-looking leaves."

MR. HALE: "That is a mite that causes that. That has nothing to do with this."

MR. IVES: "The trees may not have been sprayed with Bordeaux perhaps, and something appeared which caused that bluish tint."

THE PRESIDENT: "Dr. W. C. Sturgis, of the Connecticut Experiment Station, will now give us a lecture upon the subject of 'Spraying the Peach.'"

DR. STURGIS: "Mr. President: Before reading the short paper which I have on the subject of spraying peach trees, I want to say one word about apparatus for spraying. I cannot help thinking, after seeing Professor Waite's pictures, that we are still ahead in practical spraying apparatus. I never have seen anything, which, for simplicity and adaptability, can beat some apparatus which I have seen right in this state. It consists of a barrel mounted, and the mount of the pump, to which is connected a lot, perhaps thirty feet long, of half-inch hose. That is connected with a piece of gas-pipe, nine feet long, set with nozzles every three feet. One man drives the pump, and another carries this pipe at right angles to the course of the wagon in his hand. The man pumps, and these four nozzles deliver the spray perfectly upon the rows of trees. The system for regulating the flow through the nozzles enables the man to allow for any irregularity that opens in the rows. If the row bends

over to the right or left he can simply carry the pipe over. So far as simplicity and effectiveness are concerned, I do not believe anything can beat that simple outfit."

MR. IVES: "We use five nozzles instead of four."

DR. STURGIS: "This is fitted with a thirty-foot length of hose, and is very convenient and handy in that respect, because if the operator wishes to go ahead a little faster he can do so. He does not have to wait for a few moments while the cart is coming up, but he can go right on spraying, as he has the apparatus with him. That is not possible with the fixed pipe."

THE SPRAYING OF PEACH TREES

BY DR. W. C. STURGIS, Mycologist, Connecticut Experiment Station, New Haven

It will not be advisable for me to attempt to give in detail a full account of this subject, first, because the main feature of this session is a lecture upon some diseases of fruit trees, and secondly because the experiments concerning the results of which I have been asked to speak briefly, are described fully in the Experiment Station Report for the past season.

What led to a careful series of experiments on spraying peach trees was the general and well-founded reluctance on the part of Connecticut peach-growers to submit their trees to the action of a fungicide which had proved destructive to foliage. Whatever were the facts regarding this matter observed elsewhere, it had become a settled conviction that, for some unexplained reason, peaches could not be sprayed with safety in this state, at least, with Bordeaux mixture.

In order to give this matter a thorough test, a number of trees, comprising several varieties, were selected in two large peach orchards and, beginning early in the season, they were sprayed with Bordeaux mixture, in which the quantity of the respective ingredients varied from one to five pounds of copper sulphate, and from two to five pounds of lime, in fifty gallons of water; with a Bordeaux mixture made with soda in place of lime, with the ammonia solution of copper carbonate, and with potassium sulphide in solution (1 lb. to 50 gals.). Late in the season two forms of copper acetate in solution were tried. In all, eight different fungicides, made and applied in the most

careful manner possible, were tested on each of seven different varieties of peach trees, and later two additional solutions were tested on one variety. Spraying was begun in one of the orchards on April 26; in the other on May 23. Two weeks later the trees were examined, and, according to the condition of the foliage, were again sprayed with the same fungicide or with a more diluted form of the same. The trees were examined again a week or ten days later, and the condition of both foliage and fruit was very carefully noted.

In brief, the effect of all the stronger fungicides; viz., Bordeaux mixture in many degrees of dilution, down to, but not including, one containing only two pounds of copper sulphate and double the quantity of lime; the soda-bordeaux mixture, and the ammonia solution of copper carbonate, all caused such serious injury that their further use could not be contemplated. The injurious effects were seen in the so-called "shot-hole" appearance of the leaves, in a general yellowing of the older leaves, and in a copious falling of the foliage amounting in some cases to fully 50 per cent of the total. More serious still was a peculiar effect upon the fruit. In every case, increasingly so with the stronger fungicides, the bulk of the fruit withered and fell to the ground while still about the size of a small marble. So pronounced was this that upon some of the trees, notably those treated with the ammonia solution of carbonate, the average number of peaches per tree amounted to only twenty-three, although a full crop had set. The average yield of the trees sprayed with Bordeaux 5-5-50 was 6, while those sprayed with the soda-bordeaux did not mature a single fruit. These figures are to be compared with the average yield from the unsprayed trees, amounting to 211 peaches per tree. This is a fact which I have not seen noted in discussions regarding the effect of fungicides upon peach trees. It was also observed that the individual trees showed a very varying susceptibility to injury, the foliage of one tree, for example, suffering very little from even a strong fungicide while its neighbor of the same variety could not stand one of half the strength. Of all the strong fungicides, the ammonia solution of copper carbonate did the least injury to the foliage. Yet it was on these trees that the fruit was so largely destroyed, a fact which indicates that it was the fungicide

itself and not the loss of foliage, which was responsible for the blighting of the fruit.

The 2-4-50 Bordeaux mixture stands on the border line between the safe and the dangerous fungicides. Only in exceptional cases, owing apparently to some inherent weakness in individual trees, did it cause injury comparable in degree with that caused by any of the stronger mixtures. On the other hand, it did injure the foliage to some extent on every tree to which it was applied. Nevertheless, inasmuch as it did not induce very serious dropping of the foliage, and left the fruit practically uninjured, there is some probability that good results may, on the whole, attend its use, especially during the early part of the season.

With the use of Bordeaux mixture reduced to a 1-2-50 formula, it became apparent that the danger point had been passed. No injury to either the foliage or the fruit followed two thorough applications of it. The same was true of the potassium sulphide solution. This was used continuously throughout the season and caused hardly a trace of injury.

Peculiar results attended the use of copper acetate late in the season. This solution had been very highly recommended as a spray for peach trees by the Delaware Experiment Station, and no bad results were anticipated. The salt was purchased at a local drug store, dissolved in the proportion of 8 ounces to 45 gallons of water, and applied to several Early Rivers trees on July 18. On July 31 the orchard was visited in order to repeat the treatment, when, greatly to my surprise, the ground beneath the sprayed trees was found to be covered with yellow and spotted leaves; from 10 to 20 per cent appeared to have fallen. The fruit showed no injury, but it was, at that time, well advanced toward maturity. Of course the treatment was not repeated, but the salt used was at once subjected to chemical analysis. It proved to be, not the normal acetate of copper, but the sub-acetate, commonly known as verdigris. It then occurred to me that the Delaware people had probably used the normal acetate, and I at once wrote to them for information. Receiving no reply, I purchased other lots of so-called normal copper acetate both in New Haven and New York. In all cases they proved to be verdigris. I was finally driven to pre-

pare the normal salt myself from copper sulphate and lead acetate. On July 31 a solution of this salt, in the same proportion as the verdigris, was applied to a number of Early River trees immediately adjoining the others. No injury whatever resulted from this treatment.

To sum up the results obtained, the fungicides which produced uniform and pernicious effects upon both the foliage and the fruit, were Bordeaux mixture 5-5-50 and 3-3-50, the soda-bordeaux, the ammoniacal solution of copper carbonate, and the sub-acetate of copper or verdigris. Bordeaux mixture, 2-4-50, was on the border line, inclining to dangerous. The safe fungicides were Bordeaux, 1-2-50; normal copper acetate (8 oz. to 50 gals.), and potassium sulphide (1 lb. to 50 gals.).

Turning now to the relative efficiency of these safe fungicides in preventing the spot and mould of the fruit, it must be confessed that the results were far from encouraging, especially considering the fact that the season was distinctly favorable to the production of sound and fair fruit, and that the spraying was more thoroughly done than would generally be feasible in ordinary orchard practice.

The unsprayed trees gave an average of 37 per cent of perfect fruit; six applications of potassium sulphide gave 56 per cent; four applications of the same gave 49 per cent; one late application of verdigris (sub-acetate of copper) gave about 50 per cent; one late application of verdigris and one of normal copper acetate gave 29 per cent; one late application of normal copper acetate gave 47 per cent.

The best results were obtained with six applications of potassium sulphide, whereby the yield of perfect fruit was increased by 19 per cent over that of the unsprayed trees. It is quite possible that had the normal copper acetate been used throughout the season, its beneficial effects would have been more marked, since even the single late application increased the yield of perfect fruit by 10 per cent.

In conclusion, I feel justified, by these experiments, in recommending for the spraying of peach orchards, the following practice. Before the buds expand, spray thoroughly with Bordeaux mixture, 5-5-50. After the petals fall and until the fruit ripens, use potassium sulphide (1 lb. to 50 gals.), or this treat-

ment may safely be deferred until the fruit is half grown. Experiment judiciously with Bordeaux, 2-4-50. Do not be frightened by slight injury to the foliage. A thrifty peach tree can lose at least 10 per cent of its leaves without suffering any ill effects, and with positive benefits to the fruit in the way of high color and comparative freedom from fungous attacks.

THE PRESIDENT: "The next will be a paper on 'Grape-growing and Wine-making in Connecticut' by Mr. Albert Bernhard, of Meriden."

GRAPE-GROWING AND WINE-MAKING IN CONNECTICUT

BY ALBERT BERNHARD, MERIDEN

In speaking about grapes and wine-making at our annual meeting in February, last year, it was in a summary way: to-day I shall enter more into details about this new industry.

The samples exhibited to-day are: Claret, 1900 and 1895; port, 1900; Sauternes, 1900. The first two are made from Early Victor, Concord and Worden; the last from Delaware, the little red grape, all grown by Charles I. Allen, of Terryville, Conn.

The vintage of 1900 has been a rather remarkable one; the rarity of rain during the growing and maturing seasons has somewhat impaired the quantity, but not improved the quality decidedly. On the "must scale," an instrument to ascertain the amount of saccharine (sugar) in the grapes, the average attained in Connecticut is about sixty-five degrees, or less,—last October it came up to sixty-seven and sixty-nine for Concords, and seventy to seventy-two for Delawares.

This "must scale" (Œchsle's) gives the percentage of alcohol the future wine will contain when fermentation is completed; that is, that these wines will have respectively from seven and one-half to nine degrees of alcohol, which is a right average for wines having the requisite keeping qualities. Wines below that percentage are liable to accidents and deterioration.

It would be better, as stated before, to plant more of the newer kinds, containing a higher amount of sugar, which would

yield a higher degree of alcohol and make the wine much better, giving it stronger keeping qualities and bouquet, also higher price on the market. Green Mountain, of Stephen Hoyt's Sons, of New Canaan (Conn.) has shown as much as seventy-four degrees on said "must scale," and is a good "Sauternes" grape.

Should I know the real amount, in gallons, of wines made in our state, you would not believe it, but I can safely state that in Meriden and its immediate neighborhood there are thousands made every year, not sweet wines, but regular "clarets." We have a large class of "sons from sunny Italy" who have brought to their adopted country the same habits of thrift and economy, buying up the land on the well-exposed slopes of "West Peak," and planting same with the strong-growing Concords and Wordens, Niagaras and Diamonds, and turning into wines their crops. Some of them have in their cellars from ten to twenty barrels of the wholesome beverage, which they dispose of during the year.

I do not speak here of the regular vineyards planted in several parts of the state where the fruit is turned entirely into wine, either red or white, yielding thousands of gallons every vintage and finding a ready market from season to season, hardly leaving any old wines on hand.

Now, as to quality, I would say it is good; but with better care, better grapes and a proper knowledge of fermentation, we could produce a far higher quality. We want high-class wines! Others cannot, will not, or do not make. We can, will and do make them.

"Higher and better" ought to be our aim if we wish and expect to impress the connoisseurs with "Connecticut-grown wines."

There are dozens of ways to produce pure and wholesome wines, but probably only one way which is absolutely the best way. This is: high quality and perfectly ripe grapes; the stemming process; the crushing and a good and well-regulated fermentation in closed fermenting vats; but above all absolute and thorough cleanliness in the operations, lest the young wine gets defective. Fermentation on the husks for "clarets" not lasting over five or six days, and forty-eight hours for "port,"

with a reasonable addition of the best granulated sugar, dissolved in hot water, and poured into the fermenting vat.

White wine, or "Sauternes," is made of white grapes crushed and pressed, and fermentation takes place in the barrels.

These young wines need a racking off in December; that is, a change of barrels, taking only the clear wine. A racking off is required again in March, then in June, and October, for the first year. After the first year they will need racking off only twice a year, remembering always the strictest cleanliness, to avoid bad germs altering the wine.

The "orchard king," J. H. Hale, owes his successes to striving to improve the quality of his fruit, not only once, but always. Let us do the same in this line of viti and viniculture. How can we expect to attract the attention of consumers if our products are not superior, in some particulars at least, to others made in other parts of this great country of ours?

Our New England fruit has a better taste than southern or western grown. It is the same with our perfectly ripened and aged wines. On my European trip, last September, when in Paris, some 1895 claret was mistaken for French "Burgundy" or "Macon." The bouquet and aroma were identical. Our Society knows only of progress and improvements; let us then apply these principles in our vineyards, striving for quality, and not only for quantity.

Would it not be to our mutual advantage to grow the best grapes, so, instead of contenting ourselves with $35 per ton for Concord, Worden, or the like, we could get $60, $80 or $100, or perhaps more? These prices are paid currently in New York city and state for choice varieties yielding a superior juice.

On my return trip I made the acquaintance on the steamer of Mr. Charles Masson, vice-president of one of the oldest wine companies in America, the Pleasant Valley Wine Company, in Rheims, N. Y. Besides over one hundred acres of vineyards owned by this company, they buy every vintage hundreds of tons from growers. During the long conversations on viti and viniculture, he named, besides the old, the newer varieties of grapes, not generally cultivated in Connecticut, which are successfully raised in New York state, around Lake Keuka. They are as follows:

Black.—Marion, Montefiore, Wilder, Bacchus, Eumelan, Norwood, Early Victor.

White.—Elvira, Bell, Diamond, Rommel, Green Mountain.

Red.—Brilliant, Delaware.

The above are table somewhat, but more especially wine grapes. The Eumelan makes such a blend for champagne purposes that over $100 per ton is paid. There has been great trouble with some of the above vines. They did not bear well, having reflex stamens, and in this way being imperfectly fertilized.

Some people ask, "What is the utility of our State Experiment Stations throughout the land?" They work and do good work, practical work for the farmer and fruit-grower.

In one of the bulletins for 1900 of the New York State Experiment Station at Geneva, we have the remedy for this imperfect fertilization which has shortened so many crops of the delicious Brighton, Wyoming, Eumelan, Montefiore, Norwood, Wilder, Woodruff and Marion.

After several years of study, the Geneva station has been able to prepare a regular table or list of strongly self-fertile and imperfectly self-fertile vines, which I copy here, so as to enable our brother fruit-growers intending planting the above to know what varieties to plant to assure a regular yearly crop. The blooming seasons are divided into three classes; viz., Very Early, Medium Early and Midseason.

BLOOMING TIME

Strongly Self-fertile	*Imperfectly Self-fertile*
Very Early.—Clinton.	*Very Early.*—Marion.
Medium Early.—Bell, Elvira.	*Medium Early.*—Woodruff, Noah.
Midseason.—Green Mountain, Diamond, Rommel, Niagara, Delaware, Concord, Moore's Early, Early Victor, Brilliant.	*Midseason.*—Brighton, Montefiore, Eumelan, Wyoming, Norwood, Wilder.

Care should be taken to plant the vines according to the blooming season, so as to enable the natural agencies, the insects and the wind, to do their work properly. I may say here that it is an error to plant large tracts of vineyards with only one

variety. It has been found in France and Austria that at blooming time the natural agencies are unable to pollenize at the same time, acres and acres of the same variety, and that large areas have fruit which does not set well. On the other hand, if several varieties, not blooming at the same time, should fill the vineyard, the pollenizing process would progress more evenly and be done thoroughly. This, as you all know, is very important, and has to be reckoned with. Plant, then, your strong, self-fertilizing Concord in one row, and the Brighton next to it, etc.

We have still to fight some of the cryptogamic diseases of the vine, but now there comes a new enemy of the grape.

In Bulletin 184 for November, 1900, issued by the Cornell University Experiment Station, Professor Slingerland gives a complete history of this pest, the *Fidia viticida*, or grape root-worm, attacking the foliage when in the beetle state and the roots when in the grub form. It did some damage in New York vineyards. Some have appeared in our Meriden vineyards, but did little harm. We will have to be on the lookout for this coming season.

On the "Coe farm," in Meriden, in the Allen avenue vineyard, a trial has been started in renovating old vines by cleft-grafting, inserting two cions of new varieties on the old stock. This work began in the middle of May, 1900, and the strong growth of over two hundred grafts of the newer kinds has surpassed my expectations.

Some strong growers like Elvira, Brighton, Bell, Gold Coin and Marion have attained twelve and fifteen feet, and the wood has ripened perfectly. We now await the coming season, and upon the bearing of these grafted vines will depend the completion of the five acres left of old vines.

In regard to the coming "Pan-American Exposition" in Buffalo, besides our natural products, we ought to exhibit some samples of our wines. It would be something new, and certainly if any superiority resides in our wines, they will be appreciated and gain the widest publicity. That is what is needed. There is no state in this mighty Union which can show a more fitting emblem of viticulture than the coat-of-arms of Connecticut. In yonder capitol you see the strong and stocky grape-

vine with the large clusters, symbol of our state, at every window. Let this be an incentive to renewed efforts in this new venture of horticulture.

We are, in the United States, behind our brethren in South America in wine production. Their product in 1899 was 175,000,000 gallons, and ours was only 35,000,000. But California wines find their way to Europe, and the demand increases.

I will say a few words about the art of wine-drinking in France and the Continent. Claret is generally taken diluted with one-half water, which makes a healthful drink; at the end of a meal some of it is taken pure.

Never take claret in starting your repast without diluting with water, and do not imitate a young man from New York, who, on his return trip from Europe, sat next to me at table. On the French line they have claret and Sauternes, of which you help yourself at pleasure. He drank, to begin his dinner, one or two full glasses of Sauternes, and a little later one glass of claret. But soon after, I noticed his uneasiness, and finally he had to leave the table, being taken sick. This illustrates the abuse of wine. If this young man had diluted the wine, it would have benefited him. We must learn yet how to drink wines.

There is a little story about Bacchus, who, when only a boy, on a journey he made to Naxos in Greece, fell asleep. When he awoke he remarked a peculiar plant which had grown by his side. It pleased him so much that he took it up to bring it home. On the way he observed that the plant was growing rapidly, and to protect it against the sun's heat he inserted it in the hollow of a bird's bone which he found on the road. The plant, still outgrowing the temporal protection, he picked up a lion's bone, into which he inserted the bird's bone; but the plant still grew, and finally, to bring it safely to Naxos, he had to resort to a still larger bone, and it was that of an ass.

On reaching Naxos, the plant had grown so strongly that it was impossible to extricate it from these bones, so he decided to plant it as it was. In time it bore fruit, which, when pressed, made such a divine beverage that when men drank of it they sang like birds; if they drank more they grew strong as lions,

and with still more they brayed like asses. This is the origin of wine-making in Greek mythology.

I will say a few words of the hasty trip I took to the Paris Exposition and to Alsace last August, and in regard to the grapes and wine-making. Our stay was limited, and this accounts for the hasty survey I had.

We witnessed a beautiful floral procession, where hundreds of artistically arranged chariots, with floral and fruit decorations, made a tour of the Exhibition grounds, witnessed by thousands and thousands of people.

The "City of Wines," situated in the old Machinery Hall, was something unique. It represented the most celebrated wine-producing regions of sunny France, with an exact architectural construction of each region, in which the products and viticultural instruments were on view. It was a decided success. There, with the lofty medieval architecture of the Bordeaux and Cognac region, you would admire the more massive military constructions of the fifteenth century you meet in Burgundy. The champagne region was also well represented, etc.

But the crowning fete was the "vintage procession," in which all the wine-producing countries of Europe took part. It was a costly affair, as it surpassed in gorgeousness anything attempted before. Besides the foreign chariots and emblems of the wine industry, the French had every region represented, and they have many. But most conspicuous was an immense "bower," made by the Arbois region in Burgundy. It represented an immense cluster of grapes of all varieties and color, and was carried on poles by four men clad in medieval dress. This vintage fete closed the series of processions given at the Exposition in honor of agriculture and horticulture.

I was invited on September 2, by the "Wine and Grape-Growers' Association" at Colmar (Alsace), to attend their business meeting. The president and secretary remarked on the non-success of the individual exhibitors in getting high awards for their wines at the Exposition. They thought it lay in neglecting the strict rules of cleanliness. After some discussion on this topic, I asked the president, through my brother, to be allowed to say a few words.

The president thanked me for the remarks I made regarding

wine-making in America, adding that he was pleased to hear something new. I spoke as a member of the Connecticut Pomological Society, and I wore the badge of that Society at the gathering.

After recess, we went in a body to the Oberlin Experiment Station, situated about two miles out in the country. To my surprise I found a lot of about twenty acres entirely given up to the testing of every variety of vines from all the world. They were divided up in rows, with vines for the purposes of market, table and wine, all properly labeled as to name, origin, donator and sugar percentage on the "must scale." All our cultivated varieties of North America, as well as those of Asia and Europe, were growing luxuriantly.

Mr. Charles Oberlin, of Beblenheim, the director of the Station, gave me some very valuable information. His work embraces a life-time, as he proudly stated that ever since he was twenty — he is now over seventy — he has been working towards improving the wine grapes of Alsace, being the originator of several early grapes.

I would give you more information on this subject, but I have taken too much of your time already, and will have to close. Let us hope that the interest in viticulture will take a strong hold in our state; we have all the requisites to make it a success.

Following this interesting paper, Mr. William H. Skillman, of Rocky Hill, New Jersey, a well-known plum-grower in that state, was introduced and spoke on "The Methods of a Successful Plum-grower."

THE METHODS OF A SUCCESSFUL PLUM-GROWER

Mr. President:

Allow me to thank you, and this Society through you, for the pleasure and honor conferred upon me by asking me to address you. I am sorry, however, that you did not get a better man. When Secretary Miles asked me to come to Connecticut I consented reluctantly, not because I did not want to come, but because I realized that I would not be

able to give you as much as you had a right to expect. When a person comes from another state to talk about anything we all think he is some big gun in the business, or has some right to do it, because otherwise he would not come so far from home. In this case you will be disappointed, but as Mr. Miles simply asked me to give my practical experience and knowledge of the plum business, that is what I propose to do. When I get to talking I sometimes talk too much, and as he tells me I have about three-quarters of an hour, if I talk more than that I hope you will call me down.

Now, friends, we have, as you all know, three strains of plums that we can grow with more or less success. Those are the natives, the European, and the Japanese. The former two I have had little experience with, and with the other very fair success. I can manage to grow the former two. I can't manage the black rot. The rot is something that is ahead of me, and destroys the profit on European and native plum culture for me. Now, I wish to say right here that I am going to give my experience over in Jersey, one hundred and fifty miles away, and what is true there under certain conditions may not be true here, but there are certain points, like cultivation, etc., which, in a general way, are true in every locality, in my opinion, except in Texas. There they have a way of their own. But, as you all know, the culture of fruit, for the most part, is a local matter, or, as Hancock said about the tariff, "it's a local issue." We might as well tell the truth about it. That is so about fruit more than most any other one thing, but the way to be adopted to be successful in plum culture, that is, in regard to certain points, is pretty much the same all over. All you have to do is to be guided by the local circumstances, and that is just the reason that what may be all right here under certain circumstances will not be all right there. Now, then, the plums I have fruited of the European varieties include the French gage, Imperial, Lombard, Germantown, and three or four other varieties. I have grown them to some extent, but never enough to pay me, on account of the rot. You may have that here. If you do, I wish you would tell me what to do for it. We have it terribly. I went to some of these fellows, the profes-

sors, that offer to tell us just what to do with these troubles we have, and I said to them, "What must I do for this?" If any of them paid me any attention at all they always said, "Use Bordeaux mixture." Well, I tried it on some Lombards. I sprayed them once, and it didn't do any good. I sprayed them twice, and they kept on rotting. Then I tried it the third time, so strong that it burned the leaves a little, but still they went on rotting. Then I tried it the fourth time, but it had no effect, and I had to give it up. I can't grow the European or native plums; that is, I can't grow enough of them to pay me. I can grow more of the Quackenboss and Lombard, but even those do not come in paying quantities, and I would not advise you to plant them if the rot strikes you here as it does us in Jersey. Well, what are we to do about it? Are we to go without plums? Oh, no. Here comes the "little Jap" to take the place of those that don't seem to do well in this climate. We can grow the Japanese plum all right. We can grow lots of them, and that is what we are doing. If it wasn't for the Japanese plums we would be out of the business. Now I guess the best way for me to do is to go over the list of varieties. Of varieties, I think by this time there are thirty or forty. I will take them up in the order in which they ripen for me. First, I will name the Willard. That is a plum that is nice-looking, and large enough when properly grown, but it is poor in quality, and I would not advise any of you planting it. Still, I am not so sure you might not get something out of it on account of its being so early. It is almost as early as any other plum. Still, if you want a good, salable plum I would not plant it.

The next in order of ripening is the Georgeson. That is a yellow plum. Yellow is an unpopular color for any plum for market. It is my experience that they do not want a yellow plum. And besides being a yellow plum, they don't want this because it is poor in quality. It is golden yellow and very pretty to look at. I sent some of them into the city last year and they sold for something like 50 or 60 cents a basket, and they thought I ought to be prosecuted for damages for sending that plum to market.

The next is the Ogon. That is a yellow plum, too. It has that objection. It is a very pretty plum to look at, but that don't help to sell it much because it is poor quality and don't grow very well.

I would next name the Red Nagate. You can see from its name it is a red plum. It is pretty fair, but not so good as some others I will name. On account of its being pretty early it will sell, and bring more money, in my opinion, than any of the Japanese plums I can try. I have great faith in that plum. I have 1,700 of them planted, and I don't know if somebody don't stop me but I shall plant some more. It is a good seller, and it will grow large enough if you grow it properly. It hasn't a very rich color. The time you pick it has a good deal to do with the color. Sometimes you can get a better color by leaving it on the tree awhile.

The Abundance is a fair plum, but it is so soft and juicy I am not planting it any more. Its color is a little off for market.

Now I will name the Burbank. Here is a plum that in my opinion is one of the most wonderful varieties yet. I want that plum for canning, but I don't think my wife cans them. She likes something else. It is like the man who kissed the lady of color. There is no accounting for tastes. But that plum is one of the best of the whole lot. If you take care of it and thin it out properly it will bear for you every year, but otherwise it will bear every other year. You have probably heard it said that it was a good keeping plum, but it rots the worst for me. It doesn't rot badly. That is, it does not rot so as to destroy the crop. I was surprised over in the New Jersey Horticultural Society by hearing a man there say that Japanese plums rotted so badly. He meant generally, of all varieties, according to his statement. That isn't so. I live in New Jersey, about five miles north of Princeton, and the Burbank is the only one that has ever rotted with me.

The next is what I call the Chabot. That is a plum that for some reason has not come to the front. It is one of the best in every way that you have a mind to look at it. It seems to me that it is a plum that will come to the front after awhile. Its qualities must bring it there. It is a good plum, has a good color and is a handsome plum to look at. Fine in quality in

every way, and in my opinion that plum is bound to come to the front some day, and you will hear more of it than you do now.

The next is the Orient. That is very similar to the one I have just named. It is a good plum, and it ought to be better known.

Then I will name that fraud of frauds called the Simons. That is a fraud clean through. It is no good for anything at all. If you have anything in the fruit line that is bad in your neighborhood, multiply it by a hundred and you have the Simons.

The next I will name is the Normand. There we have something that is later in the yellow line. It is a greenish yellow. It is a fair-sized plum, and about the best of all the yellow plums. It is good in quality, and if any of you want a good plum for canning, or to eat, it will not do any harm to plant a tree or two of Golden Normand. It is all right for such purpose for home use, but the color is against it for a market plum.

The next is the Juicy. It is well named. It is an enormous bearer, every year and all the time, but don't plant it, as it is nothing more or less than a plaything.

Now I will name the best of all this line of plums, namely the Wickson. That is a tree that grows broad. I believe there is some Simons blood in it. I hope there is not, as it is a good plum. It is one of the Burbank productions and is a good plum. I have thirty-four trees in bearing. When it fruited last year the trees were loaded, and out of the lot I had a basket and a half, I guess. It is a rampant grower. It grows up like an old-fashioned poplar. It is a pretty fair plum, but it has one peculiarity; I have noticed it both years. You pick one plum and it will be very free, and perhaps the very next plum you pick off will cling closer than a brother. It is contrary to the laws of nature, and yet it is a fact.

The last will be the Satsuma. That is a plum that rots some, but is the best of them all as a canner. It is the full Japan blood, dark crimson-red. It is very palatable. I rather like it to eat myself, but when it comes to canning that is a plum that will please the female portion of the household,— it is the best canner in my opinion of them all. I have a good deal of confidence in that plum. Some of the fruit men think it is a

shy bearer, but you can't tell about that. They may be shy to-day, and just as like as not two years from to-day they will be covered with buds. Some think that of the Wickson, but the Wickson is not going to be a shy bearer in my opinion. I recommend that for this reason; not only for home use, but many of you have local markets where it will sell all right. It is not a good seller in the open market, though. It is a fair-looking plum, and large enough, and if you grow it for your local market, and let the people get used to it, and know what that plum is, there is an opportunity for you. So much for the variety part of the subject.

I want to allude to the other part of the question, to the selection of the tree, etc. First, I allude to the size of the tree. I want a one-year-old tree thrifty and small. That is my favorite. That is what I try to get. That will apply to peaches. It will apply to much of the other fruit. Brother Hale thinks he has learned better than that, and he is advocating a big tree now. I have had a good bit of experience, and give me the small tree. By the way, I am not a plum specialist as he is a peach specialist. Just to illustrate what a little tree will do: I wanted six hundred trees. I went to a nurseryman, and I said: "What have you got?" "Well," he said, "I have about four hundred of all sizes, from very small to big ones." "Well," I said, "I'll take them." I did, and I planted them right together, the little and the big ones right in together. That orchard is standing to-day, and the little trees when they were three years old had caught the big ones, and to-day those little trees are ahead of them. Now there are several points gained by doing that. In the first place, with the little tree, you first get it for less money. Eh, Brother Hale? Isn't that the milk in the cocoanut? Brother Hale is looking for that dollar the same as I am, and we want to get it quick, but I can see the other side of it. I am not such a fool that I am going to set trees that I am losing on in the end after I have learned the lesson two or three times. So my opinion is that you better plant a small tree. You save money on the start. Another thing is, by planting a small tree you can keep it under better control, and it will make you a better tree, and be a better looking tree, and come to a bearing age just as quick. I will take a little

tree in preference to the larger one every time. When I send in my money orders to the nurserymen for an order of trees I say to them, "Give me a 2½- to 3-foot tree, and if you do not have them, give me something smaller." That is the way I send my orders. If you don't specify what size you want the nurserymen will be apt to send you larger trees. That is a trick the nurserymen have. They want to get rid of their big stock every time. I have had a lot of experience with nurserymen, and there are some of then that are infernal rascals, but there are a lot more of them that are as white as the driven snow. Some of them are not so bad as they are made out. If you make a nurseryman give you what you want, and know what you want yourself, you won't have so much trouble.

Now, then, I want to tell you about this man over in Texas that has been writing about trees. He told us a few years ago that when we planted the young trees we must cut the roots of all the trees, and then take a stick and make a hole in the ground and put the tree in. I swallowed it. I planted a little block of a thousand peach trees that way. I didn't say anything, but I thought, I would see what there was in it. He said it didn't hurt to cut them off, so I cut them off up to two or three inches from the stem. I thought I was going to wake up the neighborhood on how to prune the roots of peach trees. That fall, when I counted the dead trees, I had a trifle over eight hundred dead ones in the block. The other two hundred looked as though they wanted to die, and I thought I would let them. I took them out. Now this fellow is out with another idea. He says that you must not only do that, but you must tamp the ground hard. He says, to take a piece of timber and ram the ground hard. You must cut the roots off the tree, and put the tree in the hole, and ram your ground, and then he says that you mustn't go to cultivating only a few feet out in the center, and just clip off the ground up around the trees. Well, probably you gentlemen won't do that. I hope you won't. I have had enough of his ideas.

Now, gentlemen, in regard to cultivation. I believe in cultivating. Commence as early in the spring as the ground is ready, and cultivate right along to the first of August. That

is my opinion. I think you should do it. My favorite way when I am using soil that is a little tight is to plow it until I get it just exactly as I want it. Plow your ground in the spring as soon as you can work it, and then go in with a short cut-away harrow, and you will find it will do good work. If you can do that every week it will pay you to do it, but whatever you do after you once get started to cultivate go on cultivating. After the first going over, when the ground is mellowed up, put on the harrow. A short cut-away harrow after that will stir up the most dirt and kill the most weeds, but, no matter what you use, cultivate your trees, and go right on cultivating. It will help you out all through, and especially in case of a drought. Of course, we will have a drought once in a while, when even that will not do us any good. We had one last year. But generally speaking, cultivation will help you through any drought, and that is the thing to do.

Now, in regard to trimming your plum trees. Of course, you want to head and shape your trees. Cut them back pretty well, and keep the tree well trimmed up and cut off. Some plum trees will grow away out in this shape, and you have to keep them cut back. They are rampant growers. But you want to remember this: for the first two or three years don't cut out those little shoots inside the tree. Leave those on. It is just the same with a peach tree. You want to leave those on because those are what will bring you the first fruit. If you cut them out you will not get nearly as good results from the tree. After you have had that then you can cut those off, because then you have your fruit higher up on the branch. You try that, and you will find it is worth remembering.

Again, when it comes to fertilizers, most anything that is a good fertilizer is good for fruit trees, but there is one thing if I can get it that I prefer, and that is good stable or barnyard manure. Mr. Hale has told us two or three times that he would prosecute a man that would put it on his orchard. I have used mine in my peach and plum orchards, and it does them good. I know it does. Perhaps something else may do better, but I know that does them good. Perhaps your soil

is so here in Connecticut that you do not need anything of that kind, but if your soil is light put it on. Perhaps you will not need it for the first two or three years. Perhaps your trees are growing well enough, but after you have had a crop or two, in my opinion, it will not hurt your trees a bit. I have heard men say that they doubted the wisdom of it, but in my experience it is a good thing to give the ground a good casting over. Of course, you can overdo the matter. I don't say to do it every year. If the trees look thrifty and are doing well, let them rest a year. Skip a year and don't put it on.

Another thing, if you have got some bright crimson clover in your orchard to turn under it is a good thing. If you can carry it through that is a marvelous crop for it. I had a twelve-year-old peach orchard, and I plowed under a crop of crimson clover with splendid results. If you cannot get that, plant cow-peas. These scientific fellows tell us that that crop is not a perfect fertilizer. I do not suppose it is from their standpoint, but I simply know, gentlemen, it gets there, and that is all I care about it.

Then in regard to thinning the fruit. That is a matter that we must wake up to. What we did on my place this last summer in that line was the best three weeks' work in the whole year. We do not thin enough. I take off from four to five hundred sometimes. On one tree I took off about twice that and I know I left more than that on. The result was that I had a pretty fair crop of good-sized fruit, and I believe I would have had a still better result if I had taken off half as many more. A neighbor of mine that has an orchard right across the way didn't thin so much. I shipped all of mine, and he didn't ship more than one basket out of five possibly. The Japan plums want thinning still more than the other kinds. Apples need it, and pears want it. We have to get there. As Mr. Hale says, the best is what the market wants, and that is what we have to grow. There is no use in allowing your trees to produce a lot of small unmarketable fruit if you can help it, and you can help it a lot by proper thinning. Now in regard to thinning the plums, I can't afford to spend the time to get up and pick them off. I get up in the tree at the proper stage in the size of the fruit and give it a little shake. With a little

practice you can get off a lot of them pretty evenly over the tree. I don't suppose that is the proper way to do, and it is not my ideal way of doing it, but it does get off a lot of the fruit, and I think it pays better. If you know of any better way, and I hope you do, I wish somebody would inform me their way of doing it, but until I know of something better I am going to shake my Japanese plums because it is a benefit to me to do it.

Now comes the size of the package. I have tried various things to ship in. I have tried a ten-pound crate basket plaited over the top with a board cover. I do not like that because the package does not show how much fruit there is in it. The basket don't show the quantity of fruit very well. I have dropped that. I have tried berry crates, and quart baskets, and strawberry and raspberry crates. I have tried those, and I am not sure but I may try them again. I have also tried a carrier. Most of my plums I have shipped in peach baskets. The ordinary sized half-bushel basket, and everything considered, cost of transportation, and cost of package, so far, with the exception of an experiment I tried with berry baskets, they have turned me more clear money in the peach baskets. It does not seem to me, though, that that was the right way. I don't know what is the best thing, and I wish I did. A commission man told me that he could send me raspberry crates for 15 cents a crate, and as they come as returned crates I can get them delivered at my station for that. Perhaps you can do the same way.

When it comes to grading and putting up your fruit for market, there is a chance for you to use good judgment to please your trade. Last year I had a good run of plums, and they ran very fairly uniform in size. I picked the plums off and put them right in the baskets, put the covers on, and let them go. I was in somewhat of a hurry, and that is the way I did. Other folks will not tell you to do that, but I am here to tell you my experience. Most of them will tell you to grade your fruit generally, Japan plums, and everything else; that it will sell better in the market. They tell you to put your fruit up nicely. But I am telling you, gentlemen, I believe a good many fruit-growers are dishonest about that very thing. They grade their fruit, and put their good ones on top, and the poor ones somewhere else. Some folks will put up fruit that way and then put the shipping

numbers of somebody else with a fair reputation on the packages, and then tell folks where they can be found. Buyers that are stuck that way once are not going to be stuck again on your packages or mine, and they are not going back to buy tomorrow morning unless they can buy at their own price. Put your fruit up nicely. I say do it because it is right, and because it is honest. You will feel better for it. It is the proper thing to do. They say honesty is the best policy, but if we cannot be honest only for policy's sake it is a very doubtful kind of honesty. But that saying is true, nevertheless. It will pay to be honest. But if you cannot be honest in any other way, and be honest and do right for right's sake, then be honest for policy's sake. It will pay you to do so.

THE PRESIDENT: "There is one report that we have not yet had, that of our Committee on Legislation, of which Mr. J. R. Barnes, of West Cheshire, is chairman. We will hear that report now.

REPORT OF THE COMMITTEE ON LEGISLATION

Mr. President and Members:

The Committee on Business and Legislation beg leave to report, that in their opinion, an effort should be made to secure from the state an increased appropriation for the use of this Society. We would suggest that the Legislature be asked to appropriate the sum of $1,000 a year for the coming two years.

Your Committee would recommend also that a law be enacted looking to the control of orchard pests, and that a committee be appointed by this Society to draft a suitable bill to be presented to the present Legislature.

Respectfully submitted,

J. R. BARNES,
J. B. NOBLE,
A. R. WADSWORTH.

Motion made and seconded that the report of the committee be accepted and the recommendation adopted.

MR. HINMAN: "I think general legislation of that character will not accomplish much, and I am pretty doubtful about the last part of that report. I presume every one in the hall knows the result of the Massachusetts law as to this particular disease. It seems to me, to go before our General Assembly now, when Connecticut is doing what it does for this Society, and for the Dairymen's Association, and the Board of Agriculture,—to go and ask them for an appropriation on a matter that we are none of us absolutely certain about would be a mistake. It seems to me that the state is already doing in the way of appropriating for this and that a great deal for us, and that we had better as farmers, and pomologists, and as dairymen and general farmers, go a little slow. We want to ask for less, and then we shall be in a condition later on to tell other people who are asking for thousands and thousands where we get hundreds to ask less from Connecticut, and then, when we know, and have made up our minds what we want, we will be in a much better position to get it. That is the way it seems to me. I simply make that suggestion because I believe that as farmers we can take care of this matter when we find out what it is, and because we might get turned down even if we ask for but little. Even if we got a thousand dollars it would amount to absolutely nothing. It would not eradicate any disease. It would simply put a thousand dollars into somebody's pocket. I do not believe it is a good plan."

MR. BARNES: "Mr. Hinman has an incorrect idea of that. That thousand-dollar appropriation was not intended for the use of any commission to control any insect pest, but simply for the use of the Society in paying necessary expenses. There is no special insect or disease mentioned in that report that we want the money for specially, but it is for the general expenses of the Society."

MR. HALE: "There are two recommendations of the committee, and it is the last one that Mr. Hinman objects to, but it appears he is a little mistaken."

MR. HINMAN: "I don't know whether I am or not yet. I think before we pass that we better know just exactly what that second part means."

MR. HALE: "I am in full sympathy with any work in legis-

lation that can be procured in the state of Connecticut that will help to hold in check this scale or any other pest, but after the experience we had with the peach yellows law, and knowing the sentiment of the average country member over on the hill, I should want to be pretty chary about doing anything that would lead up to anything of that kind again. To go up there now and ask for another law, I don't care how skilfully drafted that law may be, might mean defeat, and with that defeat it might mean the defeat of the appropriation that we need to carry on the work of this Society. Now we all recognize the danger of this scale, and its presence here, probably in every township in this state, and it is probably going to work a good deal of havoc, and if we can pass such a law no doubt it would be wise, but I doubt if we can do it. Therefore, under the circumstances, would it not be better for this Society to simply go on record as giving out a note of warning of what we believe the danger is and say that we would like to have the state take the matter up?"

THE PRESIDENT: "It seems to me that is just what is contemplated in this recommendation that is offered."

MR. HINMAN: "I move that that report be amended by striking out the latter part. I think the first part asking for an appropriation is well enough."

Amendment seconded.

SECRETARY MILES: "As I understand it, that simply means that we shall accept the report of the Committee without adopting their recommendation."

Upon being put to vote by the Chair the amendment was passed, and the original motion as amended also.

THE PRESIDENT: "The report of the committee is accepted as amended."

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

AFTERNOON SESSION — SECOND DAY

The Society reassembled at 1.45 P. M., President Merriman in the chair.

THE PRESIDENT: "We have a few questions left and I will present them for your consideration now. 'What proportion of plant-food used by a matured peach tree in an orchard is absorbed from the air, and what proportion from the subsoil?'"

DR. E. H. JENKINS: "What the proportion is I do not think any mortal can tell. A tree gets it wherever it can find it. If it finds it in the soil it will go very deeply into the subsoil to obtain what it needs, but as to what the proportion is, I cannot tell."

QUESTION: "South Carolina Rock. What is its value as an orchard fertilizer?"

DR. JENKINS: "That is another of those questions that cannot be answered very well. The South Carolina is not generally available, and I do not think I should recommend it to any one to use. Bone is much more readily available, and is very good, as has been proven in this state in numberless instances."

MR. PLATT: "Doctor, does that apply to the South Carolina Rock after it has been cut with acid, or to the crude Rock?"

DR. JENKINS: "After it has been cut it is more readily available, and it has been used to very good effect. The dissolved South Carolina is very good, but the crude rock is extremely slow."

THE PRESIDENT: "Does it not revert to rock again after a while?"

DR. JENKINS: "No. That without treatment has reverted so far as it can. It is very insoluble, and stays insoluble."

QUESTION: "What is the value of the Windsor Cherry to the commercial grower?"

MR. N. S. PLATT: "I have trees growing but have not had them fruit enough to know. The trees are very healthy, and the cherries are large, with good, solid flesh. It is a very good cherry, I think, but what it will do for a commercial grower I do not know."

QUESTION: "For an orchard to produce winter apples, what soil is most desirable?"

THE PRESIDENT: "I should say good, heavy plain loam. Not a sandy soil, but that which is inclined to be heavy. That will produce apples of better keeping qualities, and the trees will be more hardy."

QUESTION: "Of what value is corrosive sublimate wash in combating the peach borer?"

THE PRESIDENT: "As no one seems to be ready with an answer, we will continue that question until another meeting."

QUESTION: "In our rush to set Japan plums have we not overlooked many of the Americana sorts which are superior in quality, hardiness and longevity?"

MR. SKILLMAN, of New Jersey: "In my case I have not overlooked the European and native varieties, but I propose to overlook them hereafter. I have no use for anything except the Japan plum, especially because the others rot so, and I cannot get any money out of them. I cannot catch any of the almighty dollars by using the European or native plums."

QUESTION: "What shall we do for aphis on Japan plums?"

MR. SKILLMAN: "I don't know. I do not have it, and never saw it. The Japan varieties are particularly free from most all insects and diseases, that is, in my locality. That has been my experience since I have been growing them."

MR. ROGERS: "I have had some experience with the black pith in young orchard trees. The wood was white, and so far as I could see all right, but the pith was black. They tell me it is caused by a frozen tree."

MR. SKILLMAN: "I have had a sad experience with this trouble and have found it on peaches, pears and apples. I have lost a great many trees by it. You could not give me a tree that had a black pith. My advice is, don't set out such trees."

QUESTION: "Is there any danger of the fruit business being overdone?"

MR. SKILLMAN: "Forty years ago I heard that the peach business was going to be overdone. People said the market would be glutted, and they said latter on that Brother Hale and I were fools for going into it. The poor fruit business has always been overdone. You raise good fruit, and

if you do you need not be afraid about there being a market for it."

A MEMBER: "Mr. Skillman, tell us how you set out your Japanese plum trees so as to get a profit out of them?"

MR. SKILLMAN: "I will do it. You take Japanese plums and plant them fifteen feet apart. That is far enough. I have got them fifteen, fourteen and sixteen. You plant them fifteen feet apart each way, and you get over two hundred to the acre. You will have a few bad trees and a few that will break down from one cause or another. When the trees commence to bear well they ought to give you a peach basket of plums per tree. If they do not do that there is something wrong with the grower. When they are four or five years old they should give you two baskets, and if they do not do that there is something wrong with the grower. Now with 200 trees to the acre, when they are only yielding one basket, if you are getting fifty cents for them, there is a hundred dollars, and if they don't net you but twenty-five cents there is $50 to the acre, and when you are only getting one basket to a tree. As your trees get older, of course you are getting more. If you are getting 400 baskets, as you ought to, that is $200. Now, gentlemen, I think you will agree with me that that is as good as an acre of wheat. That has been my experience. I do not expect to get rich in growing fruit. I believe in growing good fruit, and if you grow good fruit I know from my experience that you won't have to go out into the world with fear and trembling to know how you are going to get along. You hear some people tell about the good old times, but I tell you there never were such times in the fruit business as we have right now. There never were such good prospects for success. I am optimistic in my views, I know. If I am not I try to be, and this great, broad-minded, liberal-minded Hale of yours feels the same way."

THE PRESIDENT: "Our program at this point calls for a report from the Committee on Nominations."

PROF. W. E. BRITTON: "Mr. President, and members of the Society: Your committee begs leave to present the following nominations for officers of this Society for the coming year: For president, N. S. Platt, of New Haven; vice-presi-

dent, J. C. Eddy, of Simsbury; secretary, H. C. C. Miles, of Milford; treasurer, R. A. Moore, of Kensington; and one vice-president from each county."

THE PRESIDENT: "You have heard the report. What action will you take upon it?"

Motion duly made and seconded that the report be accepted.

THE PRESIDENT: "The motion is made and seconded that this report be accepted and adopted. Any remarks? As many as are in favor of this motion will signify it by raising their hands. Contrary minds the same. The motion is carried, the report accepted and the nominations adopted."

At this point the secretary called the attention of the meeting to the requirement of the by-laws, that all officers shall be elected by ballot.

On motion of Mr. Fenn, and duly seconded, it was voted that the secretary be authorized to cast the ballot of the Society for the list of officers as submitted by the committee. The following were then declared elected: President, N. S. Platt; vice-president, J. C. Eddy; secretary, H. C. C. Miles; treasurer, R. A. Moore; county vice-presidents: Hartford—A. C. Sternberg, West Hartford; New Haven—E. M. Ives, Meriden; Fairfield—A. C. Innis, Stratford; Litchfield—B. C. Patterson, Torrington; Middlesex—C. E. Lyman, Middlefield; New London—Clifton Peck, Yantic; Windham—H. B. Buell, Eastford; Tolland—Prof. A. G. Gulley, Storrs.

President Merriman then introduced Mrs. Harvey Jewell, of Cromwell, who read a very interesting paper entitled "Suggestions on Fruit Canning and Preserving."

SUGGESTIONS ON FRUIT CANNING AND PRESERVING

I think the members of this Society will sustain me when I say that fruit in some form should appear upon our tables every day in the year and be used freely by all the family, especially the children.

The question naturally arises, how can this be done during the winter seasons economically, and at the same time give a

variety to our families? Apples, oranges and bananas are obtainable at nearly all times; but by careful forethought and energy during the summer months, when fruit is abundant, this list can be greatly increased by providing a store of canned fruits, which should be ample in quantity and of the best possible quality.

Many housekeepers, for various reasons, yearly lose more or less of their products and fail to realize the highest results of their hard labor in the hot kitchen, and so become somewhat discouraged. It is the object of this paper to help any such, if I can, by offering a few suggestions, which the writer considers essential to success and practices each year in her own home.

Select sound and not overripe fresh fruit. Plums, peaches and pears, especially, are, I think, much better in flavor and consistency if canned while quite hard, before they are ready for eating out of hand. Strawberries, raspberries, blackberries and currants are much finer flavored and better keepers if canned early in their respective seasons. Be careful not to overcook these fruits.

Be sure that the cans are absolutely clean and use new rubbers each year, and if the tops become bent by being carelessly opened, procure new ones. Carefully prepare the fruit, and if cooked in kettles, do only one or two cans at a time. Make a syrup; when boiling, drop in the fruit, cook lightly to preserve flavor; meanwhile have the cans and tops warm and so placed as to avoid direct drafts while filling and cooling; have the fruit boiling hot, lift and place neatly and carefully in jars, remove all air spaces by running the handle of a spoon or blade of a silver knife carefully down and around the sides of the jars, being careful not to break the fruit; fill to overflowing and screw on tops immediately and tighten as the contents cool.

Ingenuity should be used, and our pears, plums and peaches should be prepared in numerous ways, to insure variety. For instance, pears when cooked alone are considered insipid, but with a few slices of ginger root or a few drops of ginger extract or slices of lemon added are very nice; baked and canned they make a delicious winter dessert with cream and cake; chipped,

with ginger and lemon added, a delicious preserve is made, or combined with quince they are equally good; also spiced and made into a sweet pickle they serve as an appetizer.

For strawberries, I prefer firm, solid, highly colored berries with deep red flesh. These look well in the cans, and retain both form and flavor.

Raspberries should always be cooked in the jars; in fact, each year I am cooking more this way, and consider it the ideal method. The only objection is the quantity of syrup required, by reason of the shrinking of the fruit, but the product is far superior in flavor and texture. The past season the writer put up several hundred cans by this method, and not one can so far has failed to keep perfectly. Many housekeepers consider this a long, tedious method, but I do it easily in this way. If doing peaches, I am able to keep two girls busy paring and filling the jars with the uncooked fruit. I cook nine and ten jars at a time by using an ordinary wash-boiler. I have a wooden rack which I put in the bottom of the boiler, and place the cans upon this in such a manner that the cans do not touch each other. Fill the cans half full of cold water, and as the peaches are pared drop into the water to avoid discoloration. When the jars are full, turn off the water and fill nearly to the neck of the jar with a good syrup, which has been previously prepared, place on the rack in the boiler and fill the boiler nearly to the top of the cans with warm water, and bring to a boil; after cooking a short time from two to four more peaches may be added to each can. As soon as the air is expelled from the fruit, remove the jars from the water, put on the rubbers and seal immediately.

The secret of jelly-making is fresh and not overripe fruit. Never allow the fruit or juice to come in contact with metal, as it gives a harsh flavor. After the jelly has cooled, have ready melted paraffine, turn a thin layer over the top of each tumbler and put on the covers; this excludes all air and keeps the contents from molding over the top. When the fruit is opened the paraffine can be carefully removed and washed for use the following season if desired. For jelly use one pound of sugar to a quart of juice, for preserves three pounds of sugar to four of fruit, and in canning use no more sugar than is needed to bring out flavor and make the fruit palatable. Carelessness and hap-

hazard methods will never insure success, but the details must be carefully followed if we would attain success in this department of domestic science, and thereby give to our families a healthful diet, and so aid in bringing happiness to the home circle.

Questions have been asked in relation to the profit in a commercial way. It is my opinion that more is to hoped for by working for first-class retail custom by supplying private families who cannot prepare their own, than by trying to supply the trade. From my own experience I judge that the demand for canned goods in glass, even from the best groceries, is small; a better market, however, may be hoped for in the line of preserves and jellies.

THE SECRETARY: "I am sure, Mr. President, that the officers of this Society who prepared the program for this meeting do not need to offer any apology for placing upon it a lady speaker, which, as you all know, is somewhat of an innovation. I really had to work pretty hard to persuade Mrs. Jewell to come before us and give us this paper. She thought it was hardly the thing for her to do, and she thought she could not do it acceptably, but I am sure you will agree with me that the wisdom of our choice has been shown to be all right. Mrs. Jewell has had a great deal of practical experience, and I wish that we might spend a few moments in discussing her paper, and if anybody wishes to ask any questions I am sure she can give us a great deal of valuable information in this line."

MR. IVES: "Is it a fallacy that beet sugar will not keep fruit? I do not see where the keeping qualities come in play except for preserving. Is there any difference in sugars, that is, as to the different sources from which they come as to that?"

MRS. JEWELL: "I do not know as to that. I always use granulated sugar in my canning. I never intend to use more than is necessary to keep up the flavor. I think it is injurious to health to put in too much."

MRS. MILES: "I would like to ask this lady how she cans plums. I noticed in Middletown that her plums are very fine, both in looks and taste. It is a very hard thing to do, and I wish she would give us an account of it."

MRS. JEWELL: "I would say in regard to the canning of plums that I use the Burbank plum for canning or for preserving. In canning the Burbank plums I put the plums in jars filled with syrup, which is filled in around the plums, and then place them in water. I am careful to put in as many plums as I can, and see that the can is closed tightly. In this way the plum will retain more of its natural flavor."

A MEMBER: "I would like to ask if she has tried to can fruit without sugar? I have been told that more of the natural flavor can be retained in that way."

MRS. JEWELL: "In reply, I would say that I have not practiced that myself. I have a friend who has tried it on raspberries, and she tells me that it gives a very natural flavor. She mashes them thoroughly, and then lets them stand for several hours, and then simply cans them."

MR. WOODING: "I want to answer that question, or rather two questions, for the gentleman asked first about beet sugar spoiling fruit. I do not believe there is a lady or gentleman in this hall that can tell the difference. I have been in the grocery business for the last five years, have handled both kinds, and I cannot tell the difference yet. I do not believe there is any one of you who can. In regard to the question of putting up fruit without sugar, my wife has practiced that for the last twenty years. We never put up with sugar. It is all without sugar, and we claim it is better put up without sugar. It gives more of the flavor of the fruit. We have always done it that way, and have always had good success."

A LADY: "I would like to inquire if that is a new process,— canning fruit without sugar? What is the process?"

MR. WOODING: "We merely put our fruit in a fruit jar and cook it there. Fill up the jar about two-thirds full of water, cook it as long as we think necessary, and then take out the cans and fill them up with hot water to overflowing, then let them stand a little, and seal them up and put them away. There is not much process to it. We never have canned plums that way as much as some other fruits, but currants, raspberries and strawberries are what we use mostly, because, I suppose, that is what I raise mostly. But, in fact, we can everything that way."

MR. INNIS: "I would like to say that is something that we have practiced in our home with entire success. In regard to canning other fruit without sugar, my wife just brings it to a boil, 212°, then puts it in the cans and seals them up as you would ordinarily. In preparing it for the table she simply removes it from the can, puts it into a skillet and brings it to a boil, and then by adding the sugar you have almost the natural flavor of the fruit of the vine or tree."

PRESIDENT MERRIMAN: "Fellow members, I am very happy to announce to you that you have chosen this day a new president, who will care for your interests during the season which is before us. With Mr. Platt's ability, and his great courtesy, I have no doubt he will serve you more acceptably than the president who is about to retire. I will call on the newly elected president to appear before you and preside over the remainder of the meeting."

MR. PLATT: "I thank you for the honor, my friends, and our president for his courtesy. I have needed no introduction to you after having been before you so many times, and as you will no doubt hear enough from me in the fulfilment of the duties that ought to come to your president, I will ask to be excused from presiding over the meeting for the remainder of the day, and ask President Merriman to resume the chair. I have some duties yet to perform in selecting committees for the year, and I would ask you to excuse me for the time being."

(President Merriman resumes the chair.)

MR. HALE: "This morning, at the close of the morning session, we struck from the report of the Committee on Legislation their recommendation as to the appointment of a committee for drafting and presenting before the present Legislature a bill in relation to controlling the San José scale and other insects and injurious pests. I made a suggestion at the time that we ought, at least, to go on record concerning this important matter in some way, and I have a resolution which I would like to offer at this time, which, it seems to me, covers the ground."

"WHEREAS, That dreaded pest, the San José scale, has obtained a foothold all over our state, both in city and country,

and not only are fruit trees, but our roses, ornamental shrubs, and some of our best varieties of shade trees in danger of destruction from this pest, unless prompt action and repressive measures be undertaken; and

"WHEREAS, Other states have had for several years past efficient laws which have prevented in a large measure the spread of this insect; be it

"*Resolved*, That it is the judgment of the Connecticut Pomological Society that Connecticut ought, by proper legislation, make an earnest attempt to save our trees and shrubs; and while we feel disinclined to demand any legislation for our own and others' protection, yet we would sound this note of warning and refer the matter to the Committee on Agriculture of the present General Assembly."

MR. INNIS: "I know Brother Hale is a very modest man, and so much so that the ladies all love him, but it seems to me in that resolution he has not gone far enough. I believe if we want a thing, and it is worth wanting, it is worth asking for. Why not ask this General Assembly to take measures to suppress this pest, and not make it in the way of a suggestion to them? They are not coming here to ask what we want. If we go to them, and tell them what we want and need, I believe we are pretty sure to get it. Now as an amendment to that resolution, I would offer this:

"*Resolved*, That a committee of five be appointed by the chair to draft a suitable bill relating to the suppression of the San José scale and other insect pests in Connecticut, to be presented to the General Assembly at once."

MR. HALE: "That comes right back to the matter we fought down this morning, and I certainly hope that this Society will not attempt anything of that kind. I believe in making haste, and making it just as fast as you can, but you sometimes can get along faster by going a little slowly. I have no idea what we shall get from this present General Assembly, even though we might get some law relating to the San José scale, that we shall get what we want, or what we ought to have. We need more destruction of plants and trees in the cities and country towns in order to arouse the people to the

dangers of this disease, or this pest. I think we shall get a stronger and better law if we turn this matter over with just a note of warning to the present General Assembly, and let them consider it as they see fit, and we shall be further on five years from now than we will be with a special bill from ourselves. Let us ask for one thousand dollars for the work of this Society, and let the whole state become roused up on the subject of the San José scale, and when that comes there will be a demand for action by the Legislature that cannot be resisted, and in which we can join."

THE PRESIDENT: "It is the opinion of the chair that the longer it is delayed the more it will cost. A thousand dollars might do as much execution to-day as five thousand would next year."

MR. STERNBERG: "The amendment, I believe, is in order. There is no harm in presenting a bill, but this Society ought to be assumed to father it. We have been talking about the peach yellows law, and it has been said that we should not attempt this because that was a failure, but the circumstances in connection with that law were entirely different from the circumstances in connection with this pest. I believe it is our duty to father this movement. Every man of us ought to jump in and back it up. I, for one, am ready to do so. Whatever bill the committee may report can be modified or changed before the Agricultural Committee. I hope that Brother Hale will not oppose it for that very reason; that he can amend the bill after it is submitted to the committee in any way he thinks proper. I think we owe it to the Society, and we owe it to the interests of the state at large to present a matter of so much importance before the General Assembly for relief. I think this Society is the proper body to take that action, and it is composed of the very men who have the right, and the authority, and who ought to take the responsibility of bringing this matter to the attention of the General Assembly. I hope the amendment will pass."

MR. FARNHAM: "I fully agree with Mr. Sternberg. I did not have the privilege of being connected with the peach yellows trouble, but I think all of us are going to have the privilege of being connected with this San José scale trouble, as well as other things of that kind, whether we want to or

not. I think it is well known, as has been stated, that this San José scale pest is infesting all the towns of the state, and in the cities like Hartford, New Haven and Bridgeport the rose bushes, and flowers, and the ornamental shrubs are more or less covered. I moved a tree of the shrub order for a wealthy person in New Haven a year ago, and it was simply covered with the scale, and it lived but a short time. I told the gardener at the place that there was no use, but he did not know what it was. I know its prevalence all over the state, and I think I can go to places where roses and different ornamental shrubs are sold in this state and find it. I think it is being widely distributed from such points, and unless we can get some legislation, or some power that will back up our present experiment station men in making examinations, or get something to defray their expenses, it will be like calling the doctor when the patient is in the last stages of pneumonia. Whatever we do now will go just so far towards eradicating it. I think it is doubtful if it is possible to even eradicate it now, but I think it will be a much harder matter to do it five years from now, as Mr. Hale speaks about."

MR. HALE: "All that my good brother on the left has said may be true, and all that Brother Sternberg says is true, but it is not the whole case. We want to consider not the interest of this Society, but the interest of the state of Connecticut. We do not want to give the General Assembly the idea that this is a notion of a particular Society, but we want them to understand that all the other agricultural interests, and all the owners of land and trees and shrubs are equally interested with us. If we sound this note of warning, and then leave the matter to the Committee on Agriculture of the General Assembly, it seems to me that is all we should do. They have the power to originate any bill they see fit. The bills will finally come to them anyway, and instead of this Society originating a special bill, and fathering it all through, why not turn the matter over to the committee who acts for all the agricultural interests of the state and let them prepare a bill for themselves after all interests have been consulted. Then you will have the whole allied agricultural interests of the state united in support of the bill."

MR. HOYT: "I believe if this Society goes before the Legislature with a just and wise bill, and a bill which we know will accomplish the object, that they will grant us the law, but do not let us be over-zealous in trying to be wise. This is a matter of tremendous magnitude, but it has to be well considered. It is an easy thing to make a law, but it is another thing to make a law that does the work. We want a law that will do the work and do it effectually. Now, then, just look at this matter a moment. Do we know how we are going to do this business, and can we present to our Legislature a bill which will prevail? Has this matter been studied up enough? Have we discussed among ourselves a plan whereby this thing can be eradicated? I do not think we have. I think if we try to force the passage of a law now, with that state of affairs among ourselves, it will be premature. I do not think it is wise to do it."

MR. INNIS: "I want to say right here that I have no object whatever in trying to force anything through this body. I believe, with Brother Hoyt, that it is well for us to be careful how we go ahead, but in making this amendment I made it for a specific object. This morning, when that part of the recommendations of the committee was struck out, it was done without proper discussion. This amendment has brought out just such a discussion as we need on this floor, and if the amendment is voted down at this time I shall have no hard feelings. I believe it is wise for us to be careful how we ask for any bill pertaining to our interests, and, as Brother Hale has well said, if the Agricultural Committee of the General Assembly sees fit to put in a bill of that kind and push it through, it takes the responsibility off our shoulders and gives us an opportunity to stand back and help with those who are going to profit by it. This bill, should it be presented, not only affects the fruit-growers of the state of Connecticut, but does to a very considerable extent, as much as the fruit-growers, the general horticultural interests of the whole state. In the city of Bridgeport it will be but a few years before the whole east side will be so generally infested that they will be willing to join with other interests in some plan to suppress this pest. Very many of the ornamental trees

and shrubs are infested with it, and those of you who are familiar with that part of the city know that its great beauty is in its shrubbery."

A MEMBER: "Some years ago, as has been said here, there was a law enacted for the suppression of the peach yellows. I, for one, was in favor of it, and I was very much disappointed in the work which was accomplished. Now, I believe, in this case, there is such a thing as making too much haste. I believe at this time we are not going to gain much by pressing the matter. I believe much is going to be gained by waiting a little until the matter is well considered and we know just what we want, and by not being too hasty. I am in favor of a little more time."

MR. BUTLER: "It seems to me that the life of this Society does not depend upon the further propagation and encouragement of the San José scale, but, at the same time, I do not believe that this Society should now turn and run because they have been over at the capitol once before and had a law passed that was repealed. We have our right to petition the same as we have always had, and if some of us had applied to our business the principles which Brother Hale suggests it would be very proper to follow now, we would have given up years ago. I have always had a theory that when we knew a thing was right it was a good plan to stick to it. I do not believe there is a member of this Society but what believes it is right for this Society to do all it can for the suppression of this scale, but I do not think that the suppression depends entirely upon a state law. We might, as members of this Society, agree not to buy any stock that had not been fumigated, or which in some way was proved to our satisfaction to have no scale upon it. Furthermore, we are all of us surrounded with neighbors, some of whom very likely never heard what it was, and who do not know it when they see it. They can bring it in and propagate it for us. There is just where the difficulty comes in. We must have some protection. If this Society stands back and says, "Well, we will let it run, and take care of ourselves when we get it through other fellows because they are ignorant," we are cutting a stick for our own backs. If they are propagating the scale for us we are

going to have more than our full share of it. We must have some protection through the law to compel such people who are ignorant of the pest and its effects to take care of it. I hope and trust that this Society will not stand back because they have been beaten back on the peach yellows business. This is of much more importance than the peach yellows, because the peach yellows cannot be propagated so rapidly, and will not be distributed, but wherever this pest is it will be distributed. I hope that the amendment offered by Mr. Innis will be passed, and a bill will be presented, and that this Society will not stand back, but will go ahead and make the fight even if it is beaten down."

MR. IVES: "I think this Society ought to be the promoter of all such good work. I think this is the source from which all bills of that kind should emanate. We come here and represent the interests of fruit-growing. If we do not succeed this time we can try again, and keep at it until we do succeed."

MR. NETTLETON: "As the law is now, our nurserymen do not have to give any guarantee with their stock, and if you buy anything you do not know what you are getting in this line. If we send out of the state, on stock from other states we get a certificate, and we know something about the condition of the stock. There is no use in calling out 'Fire!' when the building is burned up. We want to yell when the building begins to burn."

MR. WADSWORTH: "Whatever action you take, or whatever measure you adopt, it seems to me that the proper course is for this Society to point out the peril and ask for the proper legislative remedy. Then you can come before the General Assembly and back up your statements without risking the reputation of your Society in any respect. I should judge from what I have heard here that it would be a matter of considerable care and study to prepare a proper bill. You do not seem to be agreed among yourselves as to what is necessary, but it is clear that the agricultural interests of the state are involved, and it seems to me the object can best be attained by adopting the course suggested by Mr. Hale, and without putting the reputation of any Society at

stake, or by putting your interests at stake by going up with a bill and asking for a specific appropriation to carry it out. It seems to me that is going a little too far. I think the resolution presented by Mr. Hale covers the whole point. That resolution points out the existence of a certain peril to your interests, and you ask for a remedy, and then you leave it to individual effort to work out the result. I believe it would be best to leave it that way."

On putting the matter to vote the amendment was lost, and the original resolution, with the exception of the last clause, which, on the suggestion of Mr. T. S. Gold, was stricken out by consent of Mr. Hale, was passed.

THE PRESIDENT: "I was hoping that some one would bring forward a resolution that Professor Britton be requested to appear before the Agricultural Committee of the General Assembly and explain this pest to them, and to take some samples with him so as to show it up in its true light."

PROFESSOR BRITTON: "Some time ago I was asked by parties in California to present a resolution here in Connecticut endorsing a national bill which is now before Congress. Even if it should fall through it seems to me it would do no harm for us to go on record as recommending it, so I will read this resolution which he sent me, except that I will put in the name of this Society :

WHEREAS, "Many foreign countries have passed laws against the importation of fruit and nursery stock, which laws were passed for the purpose of protecting their horticultural interests and the introduction of insect enemies and plant diseases; and

WHEREAS, "The United States is at present entirely unprotected in this respect, though from the character of our foreign commerce and the magnitude of our fruit industry, we are in more danger from this source than any of the nations that have legislated on this subject; and

WHEREAS, "There is now before Congress a bill which was introduced by Mr. Wadsworth, of New York, and is entitled H. R. No. 96, which bill provides against the further introduction and dissemination of insect pests and plant diseases; and

WHEREAS, "The passage of this bill would be of very great

benefit to the horticulturists and farmers of this state and of the entire United States; therefore be it

Resolved, "By the Connecticut Pomological Society at its tenth annual meeting, at Hartford, February 6 and 7, 1901, that we respectfully but urgently request Congress to enact said H. R. No. 96 at the earliest possible moment, thereby freeing our fruit-growers and farmers from the further introduction of insect pests, and preventing the distribution through interstate commerce of those already established; and it is further

Resolved, "That the secretary of this Society immediately forward copies of these resolutions to each of our senators and representatives in Congress and to the honorable president of the Senate and the honorable speaker of the House of Representatives."

THE PRESIDENT: "You hear the resolution. Are there any remarks?"

MR. HOYT: "I would like to know what we are fighting for. Whether as a pomological society or as an individual, I do not like to do things blindly. I do not know anything about it, and it may be something that we should regret."

PROFESSOR BRITTON: "In my paper last night I explained about this. It was a bill drawn up as the result of a conference in Washington. Mr. Hale was a member, and several other Connecticut men, and men representing the Board of Agriculture and different societies, and this bill which is now before Congress was the outcome of that convention. It has been amended many times to suit the nurserymen of the United States and different dealers in plants, as well as the orchardists themselves. I am sorry I have not a copy of the bill in its amended form, but from what I know of it I do not think there will be any harm in this Society endorsing it, because it is the work of men who have had much more experience in this line than any of us here."

The resolution, upon being put upon its passage by the chair, was adopted.

A MEMBER: "I hope when this matter of our state law, if there is one prepared, comes up for hearing before the committee every member will appear who can. Every man who is interested in this matter I think ought to spend a day or more,

if necessary, and go up before the committee and have the subject investigated from top to bottom."

THE PRESIDENT: "I wish somebody would make a motion that Professor Britton be requested to appear before that committee."

SECRETARY MILES: "Wouldn't it be as well to leave the matter in the hands of our Committee on Legislation? I think they would have the power to call on Professor Britton or any one else who was necessary."

THE PRESIDENT: "That might be better."

SECRETARY MILES: "I move then that the matter be left in the hands of our Legislation Committee, and that they be instructed to issue due notice when the hearing is assigned so as to have Professor Britton there and everybody else that is interested."

Motion seconded and passed.

A MEMBER: "I would suggest, in order to further this national legislation, if possible, as some doubt has been expressed as to whether we can get that bill through, that every member of this Society, and every person who is interested in agriculture in this state, whether a member of this Society or not, write personal letters to our representatives and senators in Congress urging the passage of this bill."

THE PRESIDENT: "You hear the recommendation. I trust you will act accordingly."

PROFESSOR BRITTON: "I understand that this Society is going to ask for an increase in its annual appropriation. I would move, sir, that that matter also be placed in the hands of our Committee on Legislation."

Motion seconded and passed.

THE PRESIDENT: "If there is no further business to bring forward at this time we will listen to a paper by Professor Gulley on 'Recent Observations in the Apple Orchard.'"

RECENT OBSERVATIONS IN THE APPLE ORCHARD

By PROF. A. G. GULLEY, Connecticut Agricultural College

Mr. President, Ladies and Gentlemen:

This chart that you see here has very little to do with what I am going to talk about. It is sort of a side issue. I am going to talk about some of the things we have observed during the past year. I am going to talk about a few lessons that we have learned from our apple orchards during the past year, and make a little effort to draw out your ideas as well as give some of my own. Those of you who were over at Middletown know that I spoke there about our failure in spraying. We had at the college this last year a total failure in killing some of these apple pests. The materials that we had worked all right except on that. Just why, I have not been able to determine myself, and I have nothing to say about it except that I suppose the work was done the same as usual. The spraying was done the same as it was on other trees, where it worked all right, and yet we had far more wormy apples than we have had at any time within the last four years. I am not able to account for it except to say that the season undoubtedly gave us a later edition of the codling moth. Why we should have it, and nobody else, I do not know. I know that the reports show that the spraying for insects was pretty generally good, but it was not so with us, and the only reason I can give for it is that we had a later edition of that insect. I know from this fact that we found any quantity of apples with that worm. At the time of thinning we were very careful to remove everything that showed it. A great many apples showed the effects of it only in the eye of the apple. Now, then, where does that leave us? It leaves us with this fact: that spraying would not have helped us if our theory is true. The eye of the apple had closed. The egg of the insect was laid there undoubtedly, and the worm crawled in so that spraying would not help us. So, instead of having a standard right along, we learn that we must expect a bad year in this respect once in a while. In scabbing our spraying was successful. I speak of that because in one or two cases where we did not work the top properly we had it. All my lower fruit was all

right, but the upper fruit in those cases was quite scabby, showing the difference in the amount of work that was done.

I want to say a word or two about thinning the fruit. I have a notion to say something about the cost of thinning. We have no doubt about it, for with us, as with most everything else in that line, we went through all sorts of different trees with the spray pump, and for thinning the fruit to increase its size. The big blow in September destroyed what record we had that would amount to anything, but we did, however, thin, and made some data to see what it cost. Working upon the Baldwins, because I took that kind for a sample, I found that it cost us, allowing fifteen cents per hour, or $1.50 a day, on some trees about thirty cents. We could thin some trees for about thirty cents. Some of our trees, upon which there were four or five barrels, were thinned at a cost for hand labor, picking carefully, at seventy-five cents. That was the highest; some at sixty cents, some at fifty cents, and so on down to about thirty cents, or about two hours' work on a middle-sized tree. That was satisfactory, but right here I want to ask a question. How many people know how many apples there are in a bushel? Is there any gentleman here who can tell how many Baldwin apples there are in a bushel, or in a barrel of apples?

A MEMBER: "One hundred and seventy-five."

A MEMBER: "I should say about a hundred."

THE PRESIDENT: "It depends whether you get them for first quality or second quality."

A MEMBER: "One hundred and ten to one hundred and twenty."

PROFESSOR GULLEY: "I am asking how many apples in a bushel of Baldwins. Good, fair apples, according to the standard fixed by the apple buyers of the United States at 2½ inches. That is the first growth that I am talking about. I am going to tell you how many I found. First, I got through thinning on different trees. I have some figures; three trees, each one by itself. I had another thinning of fruit, but the record mixed up in such a way that I was not able to carry it out. The first one took about two hours to thin, and from that tree we took about 600 apples, and I expect we left 1,200 on that tree,

but when we picked them there were 1,450. We had a barrel with 335 apples. That is 112 to the bushel or thereabouts. Those were good, big apples, bigger than any of you fellows put in except in your first grade apples. They ran better. They were certainly an extra grade of apples, as they came off that tree. It wasn't with the idea of throwing out anything that had a spot on it. It was just for first grade apples. Then we had half a bushel of seconds, in which there were just 60. Those were thrown out for two reasons; they were a little off. Then we had 27 apples for the third grade which were good for nothing. That only measured up four quarts. So that on that tree we had 112 extra sized apples.

"Now coming to the second tree, this stood in a row where it was difficult to get the apples picked off. It stood in the row in a way where it was difficult to get at it well. We worked on this tree about four hours. When we came to harvest the apples after that wind—it was after that hard blow we had—we had about three barrels on that tree. We had two barrels of first grade, a bushel of second grade, and half a bushel of third grade. Now looking at the size of those, it is just about 135 to the bushel. Those are just about what you men would put in your first grade apples. There is where you want to figure. The seconds were not particularly small. There is a bushel made up of 145. And then there was half a bushel that ran still smaller.

"Lastly we came to No. 3, which was the biggest of the lot, and we picked on that a little over four barrels of apples. I think it amounted to pretty near four, but not quite. Now just look at the size of those. There you have pretty near 500 to the barrel, or an average of 490. Our seconds run down to over 200 to the bushel, and the third were not anywhere. Now I should have liked to go over those apples again, and graded them up to the first tree. I should not have had half a bushel that was graded to the first tree. If I had had time to have graded them like the second, I should have had one about like this run from No. 1 to No. 3. Now the point is, the increased size from the thinning was more than enough to pay the cost. We do not know what the effect is altogether. The result from that one was not altogether satisfactory, but we do know

that the thinning increases the size of the apples without any doubt.

"Now just two or three more points. In our commercial orchard that we planted I struck another idea that is coming out this fall, and which I shall act on hereafter, and that is this: why not grow our apple orchards on the plan I have laid out? What is the use of our buying trees two or three years old and then fooling with them all summer, and then begin to get some results? Why not grow the trees and put them into the orchard? I wanted some Ben Davis. In our nursery I had been very careless about the Ben Davis. But I wanted some, and in running over stock I happened to run into those that I showed you, four years old when I bought them. We had grown them three years. It occurred to me at that time to use them. I went into them in a pretty thorough manner, and cut out the tops pretty thoroughly. This spring when I set that orchard there were twenty of them. They made a good big cartload for one horse. I thought if I could get those Ben Davis there in a row, and I thought if they lived through the summer, I should be perfectly satisfied. I did not ask them to do any growing. I had some three-year-old trees, and I had some four-year-olds, and I had these that were practically new trees, and I am blessed if they didn't make a better growth than the others. If a few of them had died I should not have been surprised. The point I want to make is this: why can't we buy our nursery stock two, three or four years old, and plant it in rows and keep it there? I believe that is a practical idea. The point is this, however: you must get them on your own land. You cannot afford to ship those trees twenty rods off from your farm. You can make more money by taking them just as you can get them, but you can't afford to go very far away for them. Their moving won't cost such a lot. I believe that those will come into bearing in a short time, and you will be a good deal the gainer by it. They will be just what a man wants.

"Last year I think I talked a little to the Society about some of the nice cions on stock we have started there. I have a red Canada apple growing. I have it growing on

some Jersey stock, and I am going to see whether it is any different or not. I am going to try the same thing over again next year, using some of our early-bearing stock. I spoke about this to the Society last year, and intimated something of what may be expected from the influence of the cion on stock by the combination. I don't know but you can make a sour apple sweet. I believe there is something interesting and valuable going to develop out of this line of work. More than we have seen yet. I tried something last spring. I took a little bit of a cion; only a bit, and root-grafted and top-grafted. Stuck them right in. I tried six of them. My root grafts did not seem to make a success. They would grow together all right, but they never started to bud. I did get one at the top to grow.

"There is another point that comes in, in the matter or order of planting, and that is as to whether we are going wide enough in our varieties. I trust we are doing as much as we can. I believe that we can get varieties, and if we will give it a little more thorough examination we will find that we can grow them.

"I find that some business men have got an idea that we must cultivate our apple orchards as we do our crops, and somebody has let out the idea that that was why his apples were larger. The first part of that, of course, is wrong, but the last part of it is true. I don't believe we ever did or should, but as a matter of fact, if there was more cultivation the apples would be of a higher quality. I don't think it is necessary to cultivate the same as for crops though.

"Now as to crops to put in the orchard. Our success with cow-peas was wonderful. We grew a tremendous crop of cow-peas."

QUESTION: "When did you plant them?"

PROFESSOR GULLEY: "They were planted within a day or so after the 7th to the 10th of the month,—a little earlier than the 10th. About the 7th of June, to be exact in the time."

QUESTION: "Did you cultivate them any?"

PROFESSOR GULLEY: "Yes, we worked them with a cultivating machine and by drilling. In our orchards there is one thing more that must be done in this state to have easy work,

and that is to get rid of these seedlings that stick up all over the country in the hedge-rows. There are the biggest lot of these wild trees allowed to grow here, more than there is all over the country. The western man does not know anything about it. I believe to-day that it would more than pay all farmers to turn to and help clear out all such trees. It would be a protection to himself and to his neighbors to get rid of such trees if he has any on his place. A good many of these diseases get their start on these trees that nobody takes any care of. It would help to check diseases on trees that are doing well, because they are apt to spread from such trees. I don't believe in fooling with them."

A MEMBER: "I have been much interested in what Professor Gulley has said, but I had a little experience of my own this last season that I would like to ask him to explain. I had but a few Baldwin apples, but right near me a neighbor had some that were very much better in size, quality and keeping qualities than those in my own orchard, which had been well fertilized and cared for. I found that some of my neighbors who had never beaten me before had better Baldwins in every respect. I would like to know why that was."

PROFESSOR GULLEY: "Well, sometimes right in the same orchard we will have a few trees that will bear better than others. It is very hard to tell always whether the trees are under the same conditions. It has been pretty well demonstrated that the matter of cultivation and care is going to help fruit generally, just the same as spraying is generally, but there is no doubt once in awhile we will have an off year when there will be a skip."

MR. HALE: "I would like to say that we still have our friend Garfield, of Michigan, with us, and he is interested in all these subjects, and I propose, Mr. President, that we call him out here on the floor for fifteen or twenty minutes. He knows a good deal that we want to get out of him before he leaves."

(Mr. Garfield being called for, came forward, and was received with applause.)

MR. GARFIELD: "I suppose, Mr. Chairman and gentlemen, that you have called on me to say something complimentary to you down here. An old Scotchman heard a man quoting

scripture. Some one asked him how he liked it. 'Oh,' he said, 'it's very much like Scotland, except that Scotland has it more condensed.' Now that is about the way it is here. You have things more condensed than we do out in Michigan, but I like your kind of talk here, and I believe you are just about as good people as we are. You seem to be on the whole 'our kind of people,' and you want to talk about things in just about the same kind of a way; that is to say, most of you are optimistic. Most of you have the corners of your mouths turned up. That is the way we ought all to go. It means that most of you are going to get the best there is out of this old world before you leave it. Anyway, we do not know of any better world than this old world at present, and we know lots of good things about this old world, and we are finding out more all the time, and we do not want to get out of it any too soon.

"Now I believe in these pomological meetings. I believe in getting together and talking over the situation. I believe in putting the dark side away, and talking and thinking about those things which are bright, and beautiful, and attractive, and which will tend to make us lively and contented in this world, and which will make us love our homes and love our fellows. If I had to ask the Legislature to do something about the San José scale I would not say very much to the members, but I would just show them the pictures of the destruction it is capable of, and then let them do the thinking. Now that just calls to my mind another matter. I am all trees. I am all forestry, and I am going to ask the Legislature to do a great lot in Michigan. I am going to try to have them do one of the greatest things they have ever done, and that is, to enact a distinctive forestry policy for the state, and the thing we are going to do in order to get them to enact it is to show them pictures. We want them to see those millions of acres of land in pictures so they will see the desolation that has come through the denuding of those lands of the trees, and from them we believe they will see the necessity of enacting a distinct forestry policy for the state, out of which will come on these millions of acres of land a heritage for the people one hundred times greater than the

heritage of those forests which came down to us. Now I want to say just this word. We believe that is a great thing to accomplish. We are in dead earnest about it. We are going to bring all the force we can bring to bear upon our Legislature, and we are going to take the subject forward as we have never taken any other subject forward in this direction, and we are going to do it because we believe the future prosperity of a great section of our state depends upon it. Now I just want to say this: if you are going into a fight against the San José scale, and it is necessary for you to obtain some legislation in order to carry that on successfully, go into it in the same spirit and I believe you will win.

"I thank you for your extreme courtesy since I have been here, and I wish you would all come up to Michigan and see how I look when I am at home." (Applause.)

Another veteran horticulturist present, Mr. Charles Black, of Hightstown, N. J., was introduced and spoke briefly. Several vases of fine seedling carnations, presented to the Society by Mr. Black, graced the president's desk.

THE PRESIDENT: "We will now have a paper by Mr. Ethelbert Bliss, of Wilbraham, Mass."

MR. BLISS: "Mr. President, and members of the Society: It gives me great pleasure to come to this meeting. I have not come before this meeting to tell you any great story of how we grow peaches up in Massachusetts, or how we cultivate them, but I came here, as I did two years ago, to learn. I wish more of our Massachusetts fruit-growers would take the time to go to such meetings. They would learn very much, and it would be money and time well spent."

ORCHARD CULTURE, BEST TOOLS AND METHODS

I have wondered why your secretary should ask me to come before this Society to give a talk on orchard culture.

I realize only too well that I am among fruit men of large experience, who have given years of careful study in the different lines of fruit culture. Some of you have very extensive orchards and have spent valuable time in their cultivation, looking after

them with the greatest care. You have made a special study of every detail from beginning to end,—the location, soil, size of trees you judge most profitable, pruning, when and how, varieties, plants, plant-food, and the tools that will do the most uniform and best work in your soil.

Now, in view of all these facts it seems out of place for me to come before this meeting presuming to interest or give you anything new in the line of orchard culture. I shall simply attempt to give you my experience along this line.

When quite young I had a special liking for planting and the care of trees, and succeeded in interesting my father in the work. We set out quite a number of sugar maples on the road-side near our home. A few years later we sold this farm and bought the one I now own. Near our home on each side of the street were beautiful large maples; in either direction from these were very few shade trees, so the first thing that spring I planted maples on each side of the street, and now, thirty-one years after, we have a very beautifully shaded street. I speak of it for this reason; if a man loves to care for trees he is much more likely to succeed in fruit culture. He should first have a love for nature, trees, plants of all kinds, and take pleasure in their care and development.

In the spring of 1894 I set out 1,400 peach trees. This really was the beginning of my doing much with the peach.

The land I use for my orchards is very stony, not only some large rocks, but the ground is full of smaller stone. Some of my neighbors thought I must be losing what little sense I had to think of cultivating those fields. I took the best care of the trees that I knew how, kept the cultivator and harrow going until the last of August, and used crimson clover, sowing the seed at the last cultivation. I have kept branching out into these stony fields, and now have some very fine peach trees growing. After the trees are set out and growing nicely we use the plow very little.

The disc and cutaway harrow usually do good work, but for this stony land the spring-tooth harrow is by far the best tool I know of for digging and stirring the soil. We also use the Hallock weeder.

One orchard of two-year-old trees is on a hill with a

portion sloping, so that it is liable to wash. We sowed oats at the last cultivation, and they grew from eight to twelve inches high. While we do not get much plant-food from this growth, we do get a little mulch, or covering for the ground, and we do not think it will wash very much with this protection. This growth will also hold the leaves as they fall from the trees, adding so much more covering.

The cow-pea would have given all this, with much more nitrogen for the trees, but we used the oats as the next best thing. In caring for our orchards, we must look after every detail as the season advances.

Thorough cultivation, continually stirring the soil the entire season, is the keynote to success in orchard and general fruit culture. This intensive cultivation means less money paid out for fertilizers, especially the first few years of the trees' growth. It makes a dust mulch that holds the moisture, and this will work wondrous results in carrying our fruit through a dry season like the one we had last year.

The man who starts in to grow peaches for the market must have a vast amount of courage; in fact, courage should be a leading characteristic of any one who expects to be a successful fruit-grower. It takes courage all along the line. We must plant the trees, furnish abundance of cultivation and plant-food for their best growth, and have courage enough to thin the fruit when it covers the branches too thickly. In a few words, I would say, to be successful in orchard culture, especially the peach, feed the trees with plenty of plant-food. For the first two or three years I would recommend drilling in three rows of cow-peas between the rows of trees. The growth from these will furnish a good supply of nitrogen. Then, as the trees come into bearing, give a good supply of ground bone and potash. Be sure and give thorough culture, for upon this will depend largely how much the orchard will return you in choice fruit. If you are fortunate enough to have a good stand of fruit, do not be afraid to thin, for one good, large, high-colored peach will bring more money than one-half dozen small ones; then the large peach, practically speaking, will not take any more vitality from the tree than one of the small ones. You can always sell this large fruit

at the highest price. The market is never oversupplied with these large, high-colored fruits, but usually is more than full of the lower grades, with color and quality so poor that few consumers want them, and surely there is no money in this class of fruit for the grower. If we have given the necessary culture through the growing season, with careful attention to the trees, and find, as the result, they are loaded with choice fruit, what are we to do with it? How shall we place this fruit on the market, making it so attractive as to bring the highest price? In short, how shall we get the greatest returns for our labor? These are questions we may well ask, for it seems to me that upon them rests the business end of the whole industry. I leave them to be answered by those of wider experience.

QUESTION: "What tool do you use mostly for cultivation?"

MR. BLISS: "My ground is full of stones, all sizes. We have carried off a good many of the large ones, except some large rocks, but the ground itself is full of small red stones, and that being the case, I do not find any tool that will do the digging like a spring-tooth harrow. A cutaway harrow will do the work nicely, but I do not plow my ground, and as the ground is very hard in the spring, the spring-tooth harrow mellows it up good. I cultivate continually through the season, clear up to the last of August or the 1st of September."

QUESTION: "What amount of cow-peas do you sow to the acre?"

MR. BLISS: "I have not done very much with cow-peas in the orchard. Last season I put cow-peas in my ensilage corn, and we cut it and let it run into the silo. I could not tell you the right amount of seed."

QUESTION: "Have you points on your spring-tooth harrow?"

MR. BLISS: "I have two kinds. One is a wheel-harrow, but on my land it is rather bad to drag around, and so I use this land harrow the most, especially in my larger orchards. I think you ought to have a harrow constructed in that style, as it will dig better. It is sharper."

QUESTION: "Then, as I understand you, you have your harrow constructed with the points so it will dig better?"

MR. BLISS: "Not specially constructed with points, no. You can dig all you want to with the ordinary harrow of that style. You can kill a pair of horses easy enough."

THE PRESIDENT: "To accommodate our speakers we deferred one of the subjects on the program, and it will now be taken up by Dr. Jenkins."

EXPERIMENTS IN FERTILIZING ORCHARDS

BY DR. E. H. JENKINS, Director Conn. Experiment Station

Every fruit-grower in this state is an experimenter. To be successful he has to experiment with soils, with fertilizers and with varieties of fruit. Almost every pomological meeting and farm institute brings out the fact that even within the limits of this little state the same given variety,—particularly of small fruits,—with the same handling and care, does not give the same results. The hardiness, productiveness and keeping qualities of a given berry are not the same in different sections of the state.

Each grower has to make his own tests for his own peculiar conditions, and the general experience of other successful growers has to be supplemented and corrected by his own individual observation.

Fruit-growers have been generous with the Station in coöperating in its work.

During this last year two prominent peach-growers have allowed us to carry on spraying experiments in their orchards which have settled certain points of general value—but at a distinct loss of crop to these individuals.

Some time I hope that the Station may have an experimental orchard of its own, where we may do as we like without the embarrassment of feeling that we are trespassing on the good nature of our neighbors or doing anything which may make their year's work less profitable.

Experimenting is expensive work, as you all know. It is not a money-making business usually for the experimenter.

It was charged recently in one of our papers that the Station had not made a single experiment on its tobacco field which the

practical farmer could make. Why, bless your heart, of course not. It would be a wrong use of funds to do that.

The Station is here to do just those things which the practical farmer cannot afford to do. The failure of an experimental crop may be as valuable as a money-making crop. The Station cannot afford to make money by farming. It should, of course, do everything as carefully and economically as possible; and the fruits of its labors are not to be measured by any revolutions in the practice of farming but by a gradual increase in knowledge of the facts which make success attainable and result in gradual improvement in farm methods.

Many of you are and have been experimenting for years on ten, twenty, fifty and one hundred acres of orchards. It seems, therefore, rather idle to call me in to say anything about fertilizer tests made in two places on a fraction of a single acre and only for a few years.

There is this consolation, however, that you know by this time, quite as well as I, the uncertainties and vexations of this kind of work, and will not expect from my work more than is warranted.

It is interesting to note that in Germany the subject of the fertilizing of orchards has been taken up and is being studied with the care and thoroughness for which German experimenters are noted

This work was begun in 1894 and was planned to continue for a term of twelve years at least before the final conclusions were made.

The potash syndicate has appropriated $7,500 for the object, six or more of the pomological institutes have jointly taken up the scientific work of the tests, and prominent fruit-growers in many places are carrying out the practical field work. The results, which we may not get in detail for five or six years yet, will certainly be most helpful to us as well as to the Germans. Certain facts have already been published, but they have chiefly a theoretic interest.

It is worth noting, however, that in their experiments on the value and effect of different forms of plant-food, the German experimenters have started out with the following formula for an *acre* of orchard: 90 pounds of nitrogen, 45 pounds of

phosphoric acid, and 135 pounds of potash, with lime in varying amount up to 4,500 pounds per acre. This is a very large amount of fertilizer; as much as we put on land for tobacco, which is usually more heavily dressed than any other farm crop. It is equal to a dressing of 600 pounds of nitrate of soda, 300 of acid phosphate and 270 of muriate or 300 of high-grade sulphate of potash per acre.

In 1896 the Station undertook some experiments with fertilizers in three different orchards in this state. In two of these there has not yet been harvested a full crop of peaches, frosts having nearly or quite destroyed the blooms each year that they have promised us a crop. It is hardly worth discussing at all these two experiments at this time.

I will briefly speak of the results of the third experiment, but I ask you to remember that these are in no sense final. Such an experiment needs to be carried on for a considerable number of years to be at all conclusive. The effect of fertilizers in orchards is not measured alone by the yield of fruit during the first few years, but also by the continued growth and bearing life of the trees. It has been shown that a large part of the profit in suitable and liberal fertilization comes in lengthening the productive life of the orchard.

For this reason such experiments need to be continued for a much longer time than suffices in the case of ordinary garden and field crops.

The third experiment is in the orchard of Mr. A. E. Plant, at Branford.

The land for this orchard, after lying in grass for several years, was broken up in the fall of 1894, and was dressed during the winter with 75 to 100 bushels of unleached ashes. It was set to peaches in the spring of 1895. Twelve hundred pounds of Mapes' corn manure to the acre was put on and the whole piece planted to corn. The next winter another dressing of 75 to 100 bushels of ashes was put on and in the spring of 1896 our experiment began.

We laid off six plots, of about one-third of an acre each, 3 rows of trees in each plot, and 16 trees in each row. To each plot has been applied, each year since, 160 pounds of acid phosphate, and to one-half of each plot 3½ bushels of lime

(equal to 167 pounds). Three of the plots received 65 pounds of muriate of potash; one received double and still another four times that amount. The last one of the series received 260 pounds of high-grade sulphate.

One plot received no nitrogenous fertilizer, a second had 170 pounds of cottonseed meal, and on the others crimson clover has been sown each year in August and turned under in the spring.

The experiment, you will see, is planned to answer these questions:

1. Is a nitrogenous fertilizer worth while?
2. If so, how does a green crop, like crimson clover, compare in effect with a fertilizer like cottonseed meal?
3. Which quantity of muriate of potash gives the best results,—200, 400, or 800 pounds per acre?
4. Do 800 pounds of sulphate of potash have any different effect from the same weight of muriate?
5. Is the annual dressing of lime of any value?

Well, you know the usual experience with orchards. It was found that the land of Plot A, which received no nitrogen, was too wet and a drain had to be laid in it. Trees died and were winter-killed and had to be taken out and new ones set.

In the five years from 1896 on, of the 48 trees set on each plot, A, which was too wet at the outset, has lost more than half the number, 29—all of them of course at once replaced; B, dressed with cottonseed meal, has lost 13; C, which had crimson clover and the smallest amount of muriate, lost 15; D, with a larger amount of muriate, 11; and E and F, with the largest amounts of potash as muriate and sulphate, have lost in these years only one tree each. Of the whole number lost, three only were suspected of "yellows."

I am inclined to attribute this larger loss of trees on certain plots more to the lay of the land and the damper soil than to any action of the fertilizers. From this orchard we have picked two crops—1899 and 1900.

Since not all the trees were in bearing, I have calculated the yield to baskets per tree in bearing. Now, I think it is quite too soon to draw any conclusions from this test. The orchard is not old enough to fully show the effects of the treat-

ment on the life and growth of the trees or on their bearing capacity.

I can only tell you what appears to be the state of things *now*.

1. We see no effect from the lime on either the yield or quality of fruit.

2. The trees where cottonseed meal was applied seem to have made a little better growth than where no nitrogenous fertilizer or where crimson clover was used. The yield of peaches was also slightly larger.

3. Where 400 pounds per acre of muriate was used the crop for two years was larger than where 200 was used, and still larger where 800 was applied.

4. We see no difference in quality of fruit and scarcely any in yield where sulphate of potash was used instead of muriate.

The most thorough and conclusive experiment on the matter of fertilizers for peach orchards, and the only one that I know of, carried through a period long enough to show fully the effects of these fertilizers, was made in New Jersey, beginning in 1884 and ending ten years later in a wind-storm which partially destroyed the orchard.

Nitrate of soda 150 pounds per acre, acid phosphate 350 pounds per acre, and muriate of potash 150 pounds per acre, were tried separately and in combination on separate plots, as well as plaster alone and stable manure, twenty two-horse loads per acre by itself and also with lime.

The final conclusion, after ten years' work and seven crops, is as follows:

1. That it pays to manure orchards on land of medium fertility. The soil in this experiment was decomposed trap rock, with a clayey subsoil and good natural drainage. The crops raised in 1884 indicated medium fertility, the unmanured plots yielding 41 bushels of shelled corn per acre. The total yield of fruit on the unmanured plot from 1887 to 1894, inclusive, was 636.7 baskets per acre, or an average of 80 baskets per year. The average yield on all of the fertilized plots, including the plaster, was 1,480 baskets per acre, or an average of over 185 baskets per year, an increase of 131 per cent. The average cost of manure for all of the plots was $9.43 per acre,

or a cost equivalent to 9 cents per basket for the increased yields.

2. That manuring or fertilizing extends the profitable bearing period of the trees. On the unmanured plot the yield was unprofitable after 1891, four crops having been secured, the average yield per acre for 1892, 1893 and 1894 being only 37 baskets per year, a yield so small as to warrant the removal of the orchard. The average yield of the manured plots was 159 baskets per acre, or 132 baskets more than from the unmanured plots during the first four crop years. On the fertilized plots good crops were secured for three years after the trees on the unmanured plots had practically ceased to bear.

3. That fertilizers or manures containing all the elements of plant-food, viz., nitrogen, phosphoric acid and potash, are more useful than single elements or combinations of two elements. The average yield per acre per year for Plots 9 and 11, which received a complete manure, was 250 baskets; the average yield for a combination of two elements was 188 baskets, and the average for single elements was 133 baskets. The result is not in accordance with the recommendations for manuring peach trees, the claim being that nitrogen has a tendency to too greatly stimulate leaf-growth. A combination of the minerals, phosphoric acid and potash only, however, showed better results than a combination of either phosphoric acid or potash with nitrogen, and indicates that the best use of nitrogen is in connection with an abundance of both the mineral elements, phosphoric acid and potash.

4. That chemical fertilizers are more profitable than yard manure. The yield from Plot 11, upon which barnyard manure was applied, was 2,064.4 baskets per acre, or an average of 258 per year. The total yield from Plot 9 was 1,939.8 baskets per acre, or an average of 242.5 per year.

The manure cost $30 per acre, and the chemical manure $10.72; the increased yield of 15.5 baskets was, therefore, secured at a coast of $19.28, or at the rate of $1.25 per basket; stated in terms of cost of manure per basket of fruit, the fruit on Plot 11 from yard manure cost 11.6 cents per basket, and on Plot 9 chemical manure cost 4.4 cents.

Some years ago, at one of the Pomological Society's meet-

ings, I spoke on this same subject of fertilizing orchards, and I want to repeat now some conclusions which I made then. Some of you did not hear them, and I can trust that the rest of you have forgotten them! But they seem to me to bear repetition.

1. Broadcast fertilizers in orchards. It is better policy than to sow around each tree separately. . . . You cannot throw bone-dust and potash salts into any part of a thrifty orchard where the tree roots will not get at it.

2. If you cultivate, plow under the fertilizer deeply, right after sowing. It keeps the main roots down where they belong, and, if the fertilizer is turned in just above them, it will sink somewhat as it dissolves, another annual growth of rootlets and root-hairs will come up to get it, and, if they are cut by next year's plowing, there is no harm done. Put your fertilizer where you want your roots, and you will get them there. You can call them as you can call a flock of hens.

3. Don't forget lime in some form, as a necessary plant-food. If you are using wood ashes freely, as many of our orchardists are doing, your orchard gets all the lime it needs. Over one-third of ordinary Canada unleached ashes is lime. But if you use muriate of potash instead of ashes, try putting on half a ton of lime to the acre every few years. It will settle the lime question, and will very likely make your fertilizer nitrogen more available.

4. Don't be afraid to put on nitrogen, quickly available nitrogen, and plenty of it. Don't give too much thought to the talk that nitrogen makes the tree run to wood and leaves. A peach crop takes off from the orchard nearly as much nitrogen as it does potash. We found twenty pounds of nitrogen in a peach crop, and twenty-two pounds of potash. We found twice as much nitrogen as potash in peach twigs and small branches. In the roots, limbs and trunks of the apple, Professor Roberts found as much nitrogen as potash, and in the green leaves two-thirds as much nitrogen as potash. Your crop doesn't grow on air. It must grow on sound, lusty wood, and only there, and sound wood must have plenty of nitrogen for its growth. A well-balanced fertilizer will not make a tree "run" to this or that; a well-fed tree will do what it was

meant to do from the beginning, and unless you starve it in one direction, you cannot *make* it run perversely in another.

5. Remember that cultivating is fertilizing. Dried blood, bone, cottonseed meal, and all the organic forms of nitrogen are thrown away in a soil too wet or too dry or not well supplied with air. They need to be tickled with the cultivator, and to have the soil above them lightened to let in air, so that, by microbe action, their nitrogen may take the form of nitrate, and go to feed the trees.

6. Does it pay to practice green manuring with rye or with crimson clover? Sometimes; and then, again, sometimes not. Think first what green manuring does—that is book farming; and then think whether your land needs that thing done—that is practical farming. Either crop gets a start in midsummer or early fall. Now before clover or rye do much of anything above ground they send out and down a very large root-system below ground. While the crop looks as though it were standing still for several weeks, it is growing tremendously below ground, and reaching out and laying hold of all the available food that it can get. It takes very little moisture out of the surface soil in the fall of the year, but takes up available plant-food rapidly. If the crop is clover, and if the soil is not rich in available nitrogen,—and it is not likely to be,—considerable nitrogen may be taken out of the air and fixed by the clover for its use. When spring comes, assuming that the crop is not winter-killed, a rapid growth begins above ground. The green crop still draws some food from the soil, and as its foliage increases, pumps water also out of the soil at a pretty rapid rate.. This goes on until the crop is turned under. Then decay begins, going on much more quickly in clover than in a grain crop, and gradually the plant-food of this green mass is turned over to the growing trees.

In the spring I would not call it any great loss if the crop dies, as crimson clover is so likely to do after living all winter. The plant-food is there in its roots ready to be taken up by the trees. But if the crop is all there in the spring, how long shall we let it grow? Some do not plow till the middle of May, when the clover is in full bloom. I question whether, when turned under as late as that, the trees will get very much

plant-food from it the same year. If the land is inclined to be dry, harm may be done by drying out the soil too much with this lush crop. If, on the other hand, the land is very moist, the green crop, by standing till full grown, may be a benefit, playing the part of a temporary underdrain.

To this I would add, in concluding: just as faith without works is dead, so fertilizer without tillage is dead also.

Tillage can for a time take the place of fertilizers. Fertilizers can never take the place of tillage. Nothing could be more striking during the last two exceptionally dry summers than the difference between orchards which were constantly tilled almost up to harvest time and those which had not been tilled at all or only in a half-hearted, unbelieving kind of a way.

The former kept their foliage green as leeks, and ripened a splendid crop; the latter showed pale, almost yellow leaves, dropping badly, and undersized fruit.

Tillage is very expensive, but it pays. That I think is absolutely certain. It is no matter, then, how expensive it is, if only it pays.

After Dr. Jenkins concluded his very valuable address, the subject of "Orchard Cultivation" was again taken up, Mr. N. S. Platt continuing the discussion, as follows:

MR. N. S. PLATT: "*Mr. President and Friends:* The matter of cultivation of orchards is something that need not be spoken about but just accepted. We have so many orchards now, particularly of peaches and plums, and have come to the practice of cultivating more or less thoroughly, that I believe we all accept the fact that peach and plum orchards need cultivating continually and thoroughly. Accepting it as a fact, then, that our peach and plum and apple orchards need continual cultivation, and we have acres and acres of land to go over and till, some of us believe pretty thoroughly that it becomes an expensive matter through the season. When it runs up to $50 or $100 for the cultivation of a single orchard through the season, and where we have several orchards, making it cost us anywhere from $300 to $500, then we want to figure closely how that is to be done. An orchard should be

planted so you can go two ways with the plow and harrow. Otherwise it will be expensive work, for there will be strips of ground that can only be partially reached, and that will grow up with weeds and grass, and your ground will get hard and your trees will be affected right at the time when they need the moisture that is in the ground. As has been said, we have had two seasons that were very dry,—1899 and 1900,—and we have found out that trees bearing a lot of fruit, very likely not getting proper moisture in a light soil, on the top the leaves begin to fall, and the trees suffer in that way through want of water. The fruit suffers more than the trees do. Now I suppose we all use the plow and harrow, and in some places that is about all we do use. If the ground has not been kept free from grass, a plow would have to be used in the orchard, especially with peaches and apples. The ground should be plowed as near as you can reach to the trees. Then, following that, there are various ways of scratching that strip which is left. We used to, in one orchard, take a common cultivator and a single horse and stir up that strip with a man holding the cultivator and another man leading the horse. Going through, perhaps once on each side, and then going 'cris-cross,' letter 'S' fashion, going through one way, in one direction, and coming back on the other side of the tree. To do that it needs a driver, because the horse is too confused. He is continually going this way or that way, and it is too much work to put upon the cultivator. The cultivator will do the work if you keep the horse in his proper path, and keep it scratching. That will make good work of it, but it is a trying job. I would rather go straight ahead. Now, then, I got up a tool different from the one that the president has shown here. He has shown you a tool to put on the end of the plow-beam so as to bring the horse's whiffletree out on one side of the beam. I do not like that so well as I do the Syracuse Grape hoe, which is rigged up to get at the same thing, but is used with a pole like that,—the ordinary two-horse pole,—and the forward end is run or projected out to the right and passes the horse clear. At the cultivator end it also projects in the same way, and has one fixed handle and one movable handle, operating a disc-wheel which acts as a rudder. Of course, if you were to

see the tool you could understand it much better. It works very well and enables you to work close up to the trees. The cultivator is out three or three and a half feet from the horse. That hoe works perfectly as regards the cultivator attachment, which is to the right, and clear away from the horse. It can be guided also perfectly. All the horse has to do is to draw and bear his shoulder against it, thus helping to keep the thing guided, and the man behind can do the rest. That helps to mellow up those strips of ground that are left.

"This cultivation ought to begin, I believe, early in the spring, before the ground dries off and becomes hard. A day's work done then will answer for as much as a day and a half's work later when the ground is dry.

"Now as to the method of putting in a crop like clover to remain there in May and June. I tried it in 1899 and I made a mess of it. The ground became dry before I got it down. I do not believe it is wise to wait. I think you better do it in the spring, and get the ground stirred up with the plow and Syracuse hoe. After that you can harrow, but keep harrowing both lengthwise, crosswise and diagonally, and keep the Syracuse hoe going with this attachment.

"As to tools, I do not believe, for a harrow, there is any one tool so good as a spring-tooth. In one orchard where the ground is sidling, and most of it slopes somewhat, the spring-tooth harrow is used. That is used with an attachment that will make it cut a little deeper. I do not believe that there are any two tools so good as a plow and harrow,—just the two tools I have mentioned. Still I have in my orchard weeds to take care of. I have to take in another thing. I am using a swivel plow throwing the soil all one way. That would leave a strip of ground on the upper side next the row of trees beyond the plow, and I am calculating to use a common single plow to plow that strip, using a right-hand plow and a left-hand plow once in the spring. After that I can keep it fine with the spring-tooth harrow and the grape hoe. I believe the spring-tooth harrow is used now in all our orchards, and it requires some such tool to allow stones to pass, or sods or clumps of grass to pass without clogging. There may be other tools like the gang-plow, or disc harrows, or cutaway harrows

that will work to good advantage in many places. One trouble that those that have disc harrows have is that they are apt to ride over stones and so escape some ground, but I have used one of those with good effect in the spring; that is, a California Cutaway with three discs that would reach close to the tree. I did not find it, in my orchard, where there are some stones, to advantage to use that tool except close to the trees, where I had already thrown the stones out; it did good work there. I understand Mr. Hale has found it to work well on his Glastonbury orchard. These things have to be worked out by the orchardists themselves, and you will find on visiting orchards that they use certain tools and combinations of them. There is no use in getting a lot of tools and making them useless unless your ground is such as to require quite a variety. I do not think that is necessary hereabouts anyway. I believe our people have pretty well accustomed themselves to their conditions, and know how they can take care of their orchards. Perhaps the main point is to just do what they think they ought to do, and use such tools as they think they need, and not permit other orchardists to suffer from the use of needless tools."

A MEMBER: "I would like to inquire the price of this Syracuse hoe."

MR. PLATT: "It costs about $12, I believe, and there are one or two attachments to it which make it cost a dollar or two additional. There is a spring-tooth attachment which I think costs about three or four dollars more. It is a tool that can be used to very good advantage. All it wants is a fair kind of a horse, a horse that can go straight ahead. It does not require but little room to turn around. It can be turned in perhaps ten feet."

A MEMBER: "Does the driver ride?"

MR. PLATT: "Oh, no; he walks behind. He has one handle which is stationary, and the other one moves the rudder. He does not have to work particularly hard, but he has to keep his eyes open, however, to carry the implement close up to the trees where he wants it."

The last speaker on this topic was Mr. A. C. Innis, of Stratford, who briefly covered the following points:

"*Mr. Chairman and Gentlemen:* For me to come in at this time and say anything to you on this subject seems preposterous, and especially to attempt to follow such men as Brother Bliss, Brother Platt, and other growers who have spoken to you so ably. An Irishman once appeared in court to testify to his income. The attorney asked him, 'What is your gross income?' 'Well, my gross income is it you want?' 'Yes, your gross income.' Pat, being a fisherman on the westerly coast of Ireland, turned around and looked at the attorney, and he says: 'Be jabers, I haven't any gross income; it's all net.' Now, in regard to the cultivation of our orchards, it seems to me it resolves itself into three questions: what to use, when to use it, and how to use it? A spring-tooth harrow, a weeder and a one-horse cultivator are the tools with which I do the work. There is no question in my mind but under some circumstances it might be useful, but after five years it is almost impossible for me to use a plow. Up to that time,—and I am speaking now of peach and plum orchards more particularly,—to use a plow was impossible with me. Therefore, I use a spring-tooth harrow, a weeder and a one-horse cultivator.

"Now as to when to begin. Begin just as soon as you can get onto the land in the spring,—just as soon as the soil does not become wet and sticky. Then, before I can plow, I calculate to go into my peach orchard with a cultivator, and go both ways if possible, and again both ways with the spring-tooth harrow. Then, unless you have very heavy land, the weeder accomplishes all that is necessary. My method of cultivation in the larger orchards is to use a one-horse cultivator both sides of the tree, going close as I can each side of the row. Then I put in my spring-tooth harrow. If I find, as I do occasionally, that there are eight sections in the cross-cultivation both ways that I can reach, then I use it diagonally, as Brother Platt has suggested. This cuts up everything on the top soil.

"Now, in the fertilization of the orchard there are all kinds of materials which are used, and they range anywhere from South Carolina rock to stable manure. I have used until last year only bone meal, muriate of potash and lime. The past

year, or in 1899, I found that my orchards were becoming deficient in nitrogen. This was evident from the appearance of the trees, and last spring I put on an application of five pounds of the best bone, and a pound and a half of muriate of potash. This gave me, according to the distance that my trees are set, 850 pounds of bone and about 250 pounds of muriate of potash to the acre. This past season I have seen the result of it in a fair crop of fruit, the foliage remained on the trees until the frost removed it, and the trees have gone into the winter, I think, in better condition than ever before. As to stable manure, I have studiously avoided it, perhaps owing to Brother Hale's advice, as much as anything, but I am inclined to think I should have too much wood-growth. I have all the wood-growth, certainly, that my trees ought to have, and I ought to avoid, I think, the probability of getting more."

A few questions remaining on the list were then taken up:

QUESTION: "Who, in Connecticut, has made a success of growing winter pears?"

MR. PLATT: "Dr. Russell, from Hartford, has exhibited two or three plates which have been very good pears, but I do not know of any of our younger fruit-growers who are making a success of growing winter pears. This gentleman is one of the old school, and has been at it for years and years, and has been fairly successful. He was exhibiting, probably, when most of us were boys."

QUESTION: "Is Hazeltine's moth trap destined to supersede spraying for insect pests?"

MR. HALE: "No."

QUESTION: "How many orchardists profit by the increasing reputation of eastern-grown apples?"

PRESIDENT MERRIMAN: "It is a well-known fact that our apples are better liked and bring higher prices than other eastern fruit because of their better flavor. I think that question has been well covered heretofore.

"Now I wish to thank the members of this Society for the courtesies they have extended to me for the past year, and for the good will and feeling that has pervailed in our Society. We come together at these meetings without trying to outdo each other, or to have any strife between ourselves, but we ought to

come here with the spirit and purpose of helping one another, and if all help, and take an interest in our Society, which I shall do in the future as in the past, we can certainly be of great use to our business and ourselves, and to the state as well. Thanking you all, I respectfully transfer this office into the hands of the one who has been appointed to succeed me, and do it very willingly."

President N. S. Platt then took the chair and announced the following appointments as chairmen of the standing committees for 1901: Membership—Orrin Gilbert, of Middletown; Exhibitions—G. S. Butler, of Cromwell; Injurious Insects—Prof. W. E. Britton, of New Haven; Fungous Diseases—J. H. Putnam, of Litchfield; New Fruits—F. L. Perry, of Bridgeport; Markets and Transportation—J. H. Hale, of South Glastonbury; Legislation and Business—A. R. Wadsworth, of Farmington.

President Platt congratulated the Society on the success of the meeting, the very large attendance and continued interest throughout all the sessions, and the fact that about thirty new members had affiliated with the Society.

At 5 P. M. the grandest meeting in the history of the Society was brought to a close.

REPORT OF THE SPECIAL COMMITTEE ON THE FRUIT EXHIBIT AT THE ANNUAL MEETING

The committee finds in the adjoining rooms two long tables well filled with exhibits of fruits, notably apples and pears, and a few nuts as well. The specimens shown are in excellent condition for this season of the year, and the whole exhibit is very creditable to the Society. Special mention should be made of the large collection of apples secured by Mr. Hale from the recent exhibition of the Maryland Horticultural Society. The first was grown in the mountain region of Maryland and West Virginia, and includes a number of varieties of western origin, new to eastern growers. The apples are of good size, very

brilliant in color and free from defects of every sort, and, although taken from cold storage and exhibited at a previous exhibition, the specimens are in fine condition. Dr. Russell, of Hartford, shows several varieties of winter pears, all in excellent condition and the more remarkable in these days of scarcity of good late pears. These exhibitions in connection with our annual meetings should be continued, and to encourage the showing of well-kept winter fruit, small premiums might be offered.

Respectfully submitted.

N. S. Platt,
Chas. Black,
A. G. Gulley,
Committee.

REPORT OF SPECIAL COMMITTEE ON IMPLEMENT EXHIBIT

We find on exhibition the following:

From Cutaway Harrow Company, Higganum, Conn.

Clark's Cutaway Orchard Rushing Plow, used and recommended by many of the large peach-growers in the state.

Clark's Extension Cutaway Harrow, showing several new improvements.

Clark's Double Cutaway Harrow.

From Old & Whipple, Hartford.

Acme Extension Harrow for orchard work.

From Harvey & Lewis, Hartford.

Microscopes, suitable for examining twigs for scale, insects, etc.

From C. I. Allen, Terryville.

Eclipse Spraying Pumps, made by Morrill & Morley, Benton Harbor, Mich. Considered by many growers to be the best outfit on the market.

From The Deming Company, Salem, Ohio.

The Deming Knapsack Sprayer.

The Goulds Manufacturing Company, Seneca Falls, N. Y.

Pomona Spray Pump and outfit; also the "Kerowater" pump for applying kerosene and water. A very practical style of pump.

From Rochester Spray Pump Company, by Henry Woodford, Avon, Conn.

The "Best" Automatic Sprayer.

From A. A. Judson, Silver Lane, Conn.

The Expansive Tree Protector for insect pests.

From Coles & Company, New York.

Fruit packages, baskets, crates, etc. A very complete exhibit.

From Butler & Jewell Company, Cromwell.

Baskets and crates.

From Bowker Chemical Company, Boston.

Prepared insecticides and fungicides, comprising Bordeaux Mixture Bodlime, Kerosene Emulsion, Whale Oil Soap, &c.

The entire exhibit of tools, supplies, etc., is a valuable feature of these meetings and should be continued.

Respectfully submitted,

J. T. Molumphy,
J. C. Eddy,
J. Norris Barnes.

VIEW IN THE PEACH ORCHARD OF PRESIDENT PLATT, AT WEST HAVEN

TWO NOTABLE CONNECTICUT PRODUCTS—"PEACHES AND GIRLS"

Report of Institutes and Field Meetings in 1900

DURING the year, of the six meetings held by the Society two were one-day institutes, in connection with the granges. Early in the year an appeal was sent out urging the coöperation of those interested in the dissemination of pomological knowledge through the medium of the institute.

The first to respond was Union Grange, and accordingly was held an

Institute at Southington, March 16, 1900

PROGRAM

MORNING SESSION—OPENING AT 10 O'CLOCK

Music.

Address, "Some Points on the Cultivation of Orchards." . . . . R. A. Moore, Kensington.

Address, "Berries, Grapes and Currants: their Successful Culture for Home and Market." . . . . . Chas. I. Allen, Terryville.

Paper, "The Relative Influence of Stock and Cion." . . . . . Prof. A. G. Gulley, Horticulturist, Conn. Agricultural College.

RECESS

AFTERNOON SESSION, AT 1.30

Music.

Address, "How Can We Best Supply the Necessary Fertilizers for Our Fruit Crops?" . . . . . Dr. E. H. Jenkins, Director, Conn. Experiment Station, New Haven.

Discussion, "Future Fruit Markets: What Shall Growers Do to Improve Them?" . . . . . J. H. Hale, South Glastonbury, N. S. Platt, New Haven, N. H. Sherwood, Southport.

A question box will be open to receive any inquiries on fruit topics, which will be answered and discussed as time permits.

Owing to a severe storm of snow and ice, the speakers were late in arriving and it was not until 12:45 that the meeting was called to order by President Merriman.

Mr. C. I. Allen, of Terryville, was the first speaker, his topic being, "Berries, Grapes and Currants: their Successful Cultivation." Mr. Allen referred first to the culture of grapes, of which he has made a success. The site for the vineyard is of prime importance, in order to avoid frosts and fungous troubles. A high southern slope is best. These varieties were recommended for market: Worden, Concord, Delaware, Niagara, Lindley and Brighton. Early Ohio is promising but rather too small in berry. Early Victor is a fine grower but also too small. Moore's Early will sell if well ripened. The Worden is his best and most profitable grape, and from the fact that it is a poor shipper we have an advantage over the western New York growers. Grapes should be sprayed every season, the early spraying being of the most importance. In pruning he cuts back his vines to two canes and trains these to upper vines of the trellis. This avoids tying during the growing season. Mr. Allen advises cutting back each year to canes of last year's growth, as the old wood bears no fruit, and aiming to keep new wood to secure a crop of fruit. Prune according to the vigor of the variety. For marketing the 5-lb. basket is the best package.

Mr. Allen receives better prices for his grapes than do the New York growers and finds the crop a sure one. His market is within the state and the home competition is small. He would advise studying the market to see what can be done to supply the near-by dealers. Our grapes are better flavored than the western fruit, because they can be more thoroughly ripened on the vine.

A vigorous discussion followed Mr. Allen's address, when the following points were brought out:

Late pruning of grapes does not rob the vine of vigor. Mr. Allen sees no difference as to time of pruning, only a weak-growing vine should be pruned shorter; he has never found summer pruning, as practiced by the French, to be of advantage to him. Mr. Chas. Leigey, of Berlin, told of the methods of grape-growing in vogue in France and also his own methods.

He advocated very close pruning to secure a few big bunches of fruit rather than many small ones. We must cultivate our vineyards thoroughly or leave grape-growing alone. He starts the work of pruning as soon as the leaves fall in early winter and prunes through the winter. Let us grow American grapes for American wines.

The next subject taken up was "Our Future Fruit Markets," the discussion being opened by Mr. N. S. Platt, who said our future fruit markets is the greatest problem now on the fruit-grower's mind. We know that our section of the country will produce good fruit in abundance; the next thing is the problem of finding a market. We must look away from home for our best markets. This will be a new thought for many of us. Mr. Platt spoke of exporting peaches to European markets, which is now a possibility open to our growers. In this kind of marketing rigid inspection is needed before shipping, and we ought to have some one follow our fruit to the market for the best results. Apples from Watsonville, Cal., are shipped to London and bring excellent prices. Apples for foreign markets must be absolutely sound and graded properly; the buyer must be able to rely upon the brand. For varieties to ship long distances, the Ben Davis type of apples is desirable, as they always have good color and will hold well to the tree. McIntosh Red and Northern Spy are not profitable apples on the warmer lands of Connecticut. Mr. Platt referred to the apples from Grand Isle, Vt., which are shipped to our markets and keep so well in cold storage. McIntosh Red, Swaar, Esopus, Spitzenberg and others do well in that section, while they are failures here. Mr. Platt showed samples of these varieties found in the market here.

Mr. Merriman asked for a better apple for exporting than the Baldwin. The Sutton Beauty was thought to be a possible successor.

Mr. Fenn called attention to the fact that the dry climate of California will produce fruit of better keeping qualities for export trade than the eastern portion of the United States.

Mr. Morse, of Cheshire, was invited to tell of his apple orchards, which have produced much fine fruit. Most of his trees are growing in sod, and with good results. He fertilizes with

wood ashes largely, and in applying the ashes he often sprinkles them over the foliage of the trees, and thinks them a remedy for the apple scab.

Mr. Merriman thought cultivation of the apple orchard is of first importance. Spraying comes next. Exporting peaches promises to be a good outlet for our growers in seasons of abundant crops.

At this point a song was given by Mr. C. W. Waterhouse, of Union Grange, which was enjoyed by all.

N. H. Sherwood, of Southport, continued the discussion on fruit markets, saying among other things: "I have not thought much about the foreign market, but have studied to improve the home markets. We growers make a mistake in marketing our fruit individually. We must make use of coöperation in this to be most successful. I am a firm believer in the commission man. We would do better to sell our produce through one central house and avoid sending to a market already overloaded. Farmers all over our country must join hands in the marketing end of their business. Other industries have had to come to it; why not the farmer?"

Mr. Sherwood told of his success of growing and packing onions for the New York market. Make your name a guarantee of the quality of your product and keep up the reputation of that name. In selling strawberries, pick carefully, sort and grade the fruit, and let the commission man sell it for you. We must not stay at home all the time, but get out and study the market. Farmers are too independent. What a power they could wield by means of coöperation! Don't sell at retail and to a commission house too; you can't do both successfully. As these reforms in marketing work out we see things more clearly.

On account of the absence of several of the speakers the question box was made a feature of the meeting.

QUESTION: "Who has tried the Wilder grape?"

MR. ALLEN: "It is a tough grape and of peculiar flavor, but a good keeper."

QUESTION: "What of the knapsack style of spray pump?"

Several thought it undesirable, because too heavy to carry on one's back. It has its place, however, in small work.

QUESTION: "Is crimson clover a good cover crop for the peach orchard?"

MR. PLATT: "I have used it and like it. Often we make the mistake of plowing it under too late in the spring. It will quickly sap the moisture from the soil at that season."

QUESTION: "Is potash and bone a good fertilizer for peaches?"

Some present thought wood ashes better than muriate potash.

Mr. Frisbie thought the lime in ashes of as much benefit to trees as the potash.

Mr. Platt recommended using ashes and muriate alternate years.

Mr. Merriman considered bone very necessary in an orchard fertilizer.

QUESTION: "What are the three best kinds of plums?"

"Red June, Abundance and Burbank."

QUESTION: "Which pears shall we plant, Standards or Dwarfs?"

"Standards every time." Several said the Kieffer pear is not much grown for market in Connecticut.

Mr. Merriman considered the Cumberland raspberry the coming berry for market.

QUESTION: "Are currants profitable in Connecticut?"

MR. ALLEN: "A limited amount will sell, and pay too; but not too many of them."

QUESTION: "Are mixed orchards desirable?"

"Apples and peaches go well together."

QUESTION: "How late shall we continue cultivation?"

MR. MERRIMAN: "Cannot cultivate apples too much."

As to berries, several had cultivated throughout the season with good results.

MR. PLATT: "We need to cultivate our peach orchards when the trees are carrying a crop of fruit. In a dry season late cultivation is very necessary to make size of fruit."

Mr. Merriman cautioned against making the buds tender by too late cultivation.

Mr. Sherwood asked as to spraying peaches for the scab.

Mr. Platt said to take off the mummied peaches first and

destroy them, then spray with sulphate copper solution before the buds swell in spring.

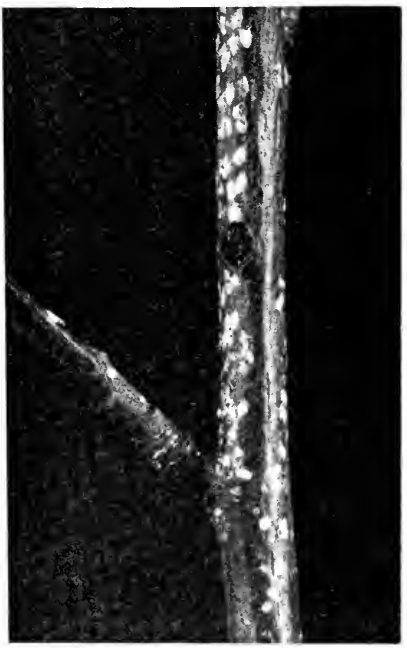
This is a serious trouble and often destroys a whole crop.

Mr. Platt favored giving an orchard plenty of sunshine and free circulation of air to help overcome this disease.

A paper on "The Relative Influence of Stock and Cion," by Prof. A. G. Gulley, was read by the secretary in Professor Gulley's absence, followed by a discussion of the topic.

The grafting of the improved chestnuts was recommended; too expensive to purchase the trees; buy the cions and graft our native seedlings.

After extending a vote of thanks to the Grange for their hospitality, the meeting adjourned at 4.15. About one hundred were in attendance.



SCURVY BARK-LOUSE (*Chionaspis furfurus*). Fitch

Institute at Stratford, March 31, 1900

PROGRAM

MORNING SESSION—OPENING AT 10.30

ADDRESS OF WELCOME . . . . . F. S. HOPSON, Lecturer State Grange.
MUSIC.
ADDRESS, "Injurious Insects of the Garden and Orchard." . . .
PROF. W. E. BRITTON, Horticulturist Conn. Experiment Station.
ADDRESS, "The Home Fruit Supply." . . . GEO. S. BUTLER, Cromwell.
QUESTION BOX.

RECESS

AFTERNOON SESSION AT 1.30

MUSIC.
ADDRESS, "The Outlook for the Fruit-Grower in Connecticut." .
J. H. HALE, South Glastonbury.
PAPER, "Agricultural Possibilities at Home and Elsewhere." . .
GEO. F. PLATT, Milford.
DISCUSSION, "How to Care for Our Orchards" . . . . . .
Cultivation . . . . . PRESIDENT J. H. MERRIMAN.
Pruning and Thinning . . . . . E. M. IVES, Meriden.
Spraying . . . . . DR. W. C. STURGIS,
Conn. Experiment Station, New Haven.

The Society accepted an invitation from Housatonic Grange of Stratford, and an interesting and profitable meeting was held in that town, March 31. President Merriman called the meeting to order at 10.45 A. M. Worthy Master F. S. Hopson, of the Grange, gave an address of welcome, greeting the Society very cordially, and saying that he was glad that the efforts of the Society were being appreciated. "The awakening interest among farmers in regard to fruit culture is a welcome sign of the times." A pleasing vocal solo was given by Miss Eva Innis, after which Professor W. E. Britton, of the State Experiment Station, was introduced and spoke on the subject of "Injurious Insects of the Garden and Orchard." Among other things he said the subject of insects is an old one but always timely.

The Professor referred to the green cabbage worm and its

destructive work. Also the plant lice on peas, which have been so prevalent the past season. The fumigation of nursery stock is one of the latest methods of dealing with many insect pests. The San José scale is one of the pests that is being controlled in this way. A wash of whale-oil soap applied in June is the best remedy for all the scale insects. In fact, at this season of the year, when the eggs are hatching, is the only time to effectively fight these pests. Paris green is a sure remedy for most of the insects attacking the cabbage and may be safely used while the plants are young.

For the codling moth which attacks the apple, spray the trees in the spring while the blossoms are upright and before the calyx closes up. Many growers are practicing spraying once or twice with Bordeaux and Paris green before the buds open, for the bud moth. The most successful method of checking the ravages of the canker worm is to apply a sticky band about the trunks of the trees in October. This prevents the females from depositing their eggs. For the plum curculio, jarring the tree is the surest way. The European varieties of plums, however, may be sprayed for this insect. The Professor recommended for most biting insects, spraying with one pound Paris green to 150 gallons of water, adding a little lime. In the discussion following, Mr. Platt said: "We have the San José scale in our orchards and are digging out and burning the trees."

PROFESSOR BRITTON: "You can just as well control the scale with kerosene or whale-oil soap, first pruning back the trees severely."

Mr. Cook gave a valuable recipe for a tree-wash for borers: Two ounces of soap potash to 8 gallons of water, adding a handful of sulphur and lime enough to make the mixture stick. This he applies in June.

The next subject under consideration was the home fruit supply. Mr. George S. Butler, of Cromwell, opened the discussion, and said that, as a rule, the mechanic's home is better supplied with fresh fruits than is the farmer's table. In an interesting paper the speaker told how and what to plant in the fruit garden in order to have a continuous supply through the season.

At this point the contents of the question box were brought forward for discussion.

Q. "What are the best varieties of Japan plums for home use ?"

MR. BUTLER: "The Abundance is the earliest *good* plum. The so-called Earliest plum is very poor in quality. Berger and Engre are also early, but worthless. Lutts and Red June both ripen earlier than the Abundance, but are not equal to it for quality. For a succession plant Burbank, Chabot, Satsuma, Wickson and Hale."

MR. PERRY: "I would add the Kerr, which is a fine early yellow plum, ripening ahead of the Red June. Normand is another yellow plum of great value. The new October Purple is also very promising and is a wonderfully strong grower."

Q. "Shall we plant gooseberries for profit ?"

MR. BUTLER: "No; they will sell only in a limited way."

Q. "What are the best three varieties of strawberries for the home half-acre ?"

Mr. Butler named Michel's Early for earliest, Haviland or Bubach for midseason, and Brandywine or Gandy for late. Several present objected to Gandy on account of its acidity. Mr. Beard said if Gandy is left to ripen thoroughly on the vines it will not be acid.

After giving an invitation to those present to become members of the Society, the president announced an adjournment for dinner. During the recess the ladies of the Grange served a bountiful lunch, which all enjoyed.

The meeting came to order again at 2 P. M., with an increased attendance. A piano solo by Miss Seeley opened the program. Miss Fanny Seeley, of Plattsville, gave a recitation which was highly enjoyed, and she responded to an encore. In the absence of J. H. Hale, Mr. George F. Platt gave a brief talk on "Agricultural Possibilities at Home and Elsewhere," telling of his winter trip to Porto Rico. He said the island is in an undeveloped state, but the advantages for successful fruit- and vegetable-growing are promising. With irrigation it would be a real paradise for gardeners, as the growing season is all the year round, the banana being the staple food crop. Orange culture offers great possibilities. There are no budded trees

on the island, all the oranges being produced from seedling trees.

The Spanish have always controlled the land and the business of the island, but American capital and enterprise bids fair to revolutionize things soon.

Mr. E. M. Ives, of Meriden, next spoke on "Pruning, Spraying and Thinning in the Orchard." Spraying the fruit is more essential than thinning, but trees that are sprayed from year to year will produce larger crops of fruit, and then severe thinning is necessary. Thorough pruning is the first step in the direction of producing a good crop of fruit. Mr. Ives showed by means of a chart the comparative results of spraying two sets of apple trees. The effect of spraying on the keeping qualities of the fruit was very marked. Over one-half of the fruit from the unsprayed trees decayed, while there was a loss of only 17 per cent from the sprayed trees. Pruning, thinning and spraying were all factors in these results. Prune enough to open up the trees to the light. Oftentimes summer pruning is necessary and very effective in securing highly colored fruit. The subject was then briefly discussed by several present. Mr. Innis inquired the best way of thinning plums. Mr. Perry gave his method, which is to use pruning shears, running rapidly along the sides of the limbs.

President Merriman gave an account of his old Baldwin apple orchard, and what thorough pruning, thinning and spraying had done for it. The last speaker of the afternoon was N. S. Platt, of New Haven, who gave his views on the outlook for the fruit-grower in Connecticut.

After passing a vote of thanks to Housatonic Grange, the meeting closed at 5 o'clock. Nearly one hundred and fifty were present, and as a result of this institute the work of the Society and the interests of the fruit-grower gained many new friends in this part of the state.

FIELD MEETINGS IN 1900

CONTINUING the important feature of summer gatherings on the farms of the members, the Society enjoyed two outings in 1900, the first during the strawberry season at A. E. Plant & Son's farm in Branford, and another later on in the summer at the State Experiment Station in New Haven. Other invitations would have been given, but for the fact that the extremely dry season affected fruit crops to such an extent as to make a poor showing on most farms.

Strawberry Meeting at Branford, June 19, 1900

RESPONDING to a cordial invitation from Messrs. A. E. Plant & Son to visit their extensive fruit farm, nearly two hundred members of the Society and other guests spent a most enjoyable day at Branford.

The visitors filled a special car attached to the early morning train from New Haven, and by special arrangement stopped at Mr. Plant's largest berry field, located some distance west of Branford and near the railroad. After examining these six acres of splendid fruit, from which several thousand quarts were being shipped daily to Boston, the party took teams for the Plant homestead, pleasantly situated in the village of Branford. The pleasant social chat and exchange of views among the visitors, always the most enjoyable part of these gatherings, was interrupted all too soon by the call to the dining tables, which were tastefully arranged under canvas on the lawn and were loaded with the good things provided by the hostess and other ladies of the Society, luscious strawberries forming a prominent part of the feast. After dinner impromptu speeches were in order, President J. H. Merriman presiding. Mr. Plant welcomed the company and gave a brief account of his fruit-growing and the

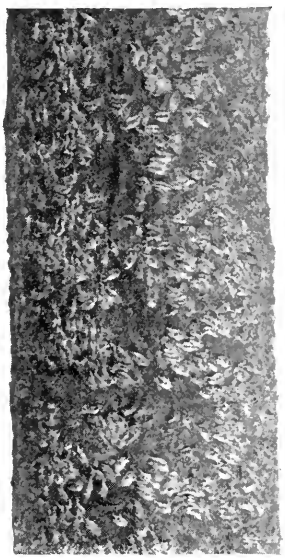
methods used, which have been very successful. Edwin Hoyt, of New Canaan, was next called upon, and said: "Many of us feel our smallness when we get on a large fruit farm like this one, but we all can learn valuable lessons from Mr. Plant's operations." Mr. N. S. Platt said he was familiar with this farm and the thrifty, clean appearance of the crops is only an average condition here. Mr. Plant has a hard, stiff soil to

THE DINNER TABLES—ALWAYS A PROMINENT FEATURE OF FIELD MEETINGS

work, but with his methods and enterprise success has been attained. The help of his son has been no small factor in reaching these results. Other speakers were Mr. R. L. Hammer, of Branford; Professor Britton, of New Haven; F. S. Hopson, lecturer of the State Grange, who said he admired Mr. Plant's system of thorough cultivation; J. M. Hubbard, of Middletown; Rev. T. S. Devitt, of Branford; Dr. Gaylord and S. G. Cook, of Branford; G. F. Platt, Milford; and A. N. Farnham, New Haven, who thought that we make no mistake in leaving home, even in a busy season, to attend such meetings as this. We come away refreshed and inspired. Mr. L. Sanderson, of New Haven, said we need to feed our soils judicially, but the best fertilizer, after all, is intensive cultivation. Mr. J. C. Eddy was the last speaker, and proposed a vote of thanks to the host, which was heartily given.

A small but choice exhibit of strawberries contributed by

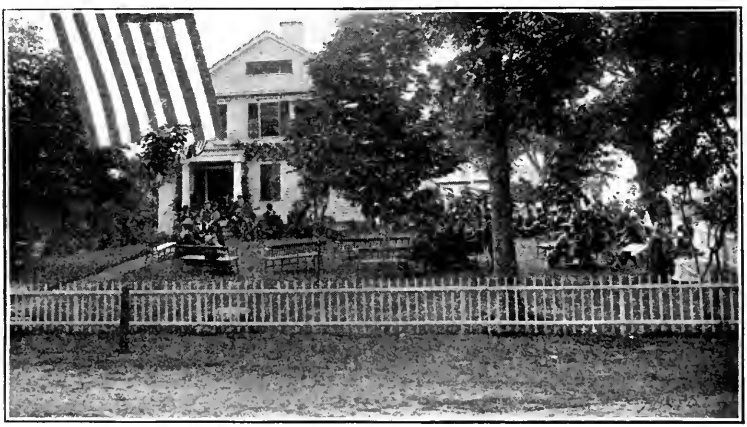
several members attracted the attention of all present. The remainder of the day was devoted to looking over Mr. Plant's extensive peach orchard, pear orchard (one of the few paying ones in the state), currants and raspberries and the cultivated crops, of which onions and potatoes are leading specialties, and lastly a trip to the elegant new Blackstone Library rounded out a day of rare pleasure and profit.



OYSTER-SHELL BARK-LOUSE (*Myditapis promorum*). Bouché

Field Meeting at the State Experiment Station

AUGUST 28, 1900, the Society visited the Connecticut Experiment Station, at New Haven, and received a cordial welcome from the director, Dr. E. H. Jenkins, and other members of the staff. The visitors availed themselves of the opportunity offered to look over the various departments of the Station and note the valuable scientific work being carried on in the interests of the farmer, especially the investigation of the adulterations in foods, the studying of plant diseases and injurious insects, experiments with fertilizers, etc. A bountiful lunch was partaken of on the lawn, under the trees, following which brief remarks were listened to from G. S.



THE PLANT HOME AT BRANFORD

Butler, of Cromwell; B. C. Patterson, Torrington, master of the State Grange; W. M. Tyler, Waterbury, and Mr. J. H. Hale, who called attention to the value of the Experiment Station and the need of coöperation between farmers' organizations and the Station. Incidentally Mr. Hale threw out the point that the present season he had been successful in

changing undesirable varieties of orchard fruits by budding and grafting. As an instance of this he spoke of changing the Sneed peach to Carman. Prof. A. G. Gulley told of the plans for preparing a suitable fruit exhibit for the coming Pan-American Exposition. Our Connecticut fruits made an excellent showing at the Paris Exposition. At 2 o'clock the party boarded special trolley cars and made a trip to the Atwater Bros. market-garden farm in Cedar Hill. The afternoon was spent in looking over the crops of vegetables, strawberries and the large peach orchard, the latter showing the effects of the severe drought. The fruit, loading the trees, was greatly shriveled, the leaves wilted and yellow, and in many cases much of the fruit was dropping—a sad sight, indeed, and a most discouraging one for the growers; a fine crop of fruit only partially matured lost for want of a little rain, and no signs of any in sight. Yet this unpleasant spectacle was not without its striking and helpful lessons—that the fruit-grower must reckon on seasons of drought and be prepared to fight it with every means at his command. About one hundred members participated in this second outing of the summer.

The Third Annual Exhibition of Fruits (1900)

WITH the closing of the field meeting season, preparations were begun for the Fall Fruit Show of the Society. Responding to an urgent invitation from the Middletown members of the Society, the exhibition was held in that beautiful city October 4 and 5, 1900. The commodious City Hall was placed at our disposal, and, aided by the liberal efforts of our Middletown friends, a most successful meeting was carried out.

FIRST DAY—MORNING SESSION

Tuesday, October 4, was largely taken up with receiving and arranging the exhibits, which were numerous and of high quality. Representative growers from all sections of the state. to the number of fifty-six, contributed exhibits, and an aggregate of nearly 800 separate plates of fruit competed for the premiums. The staging was in charge of Prof. A. G. Gulley, chairman of the Committee on Exhibits.

What a magnificent sight was presented as one entered the hall! Long lines of tables filled with beautifully colored, perfect specimens of the fruit-growers' skill—a veritable study in color and form! The preserved fruits, too, were largely in evidence. Probably no finer showing of native fruits has ever been held in our state, nor has an exhibition devoted entirely to fruits received greater attention and praise from so large a number of visitors.

FIRST DAY—AFTERNOON SESSION

According to the program, President Merriman called the Society to order and announced that in the absence of the speakers who had been engaged for this meeting, the Society would have the pleasure of listening to Mr. E. C. Powell, ex-

secretary of the Eastern New York Horticultural Society. Mr. Powell complimented the Society on the excellence of its fruit exhibit and said that it was by far the best in quality of anything he had seen before. The speaker gave an interesting account of apple orcharding as carried on at his father's fruit farm in New York state. The president next called upon Mr. George M. Clark, of Higganum, who said he came to this meeting to learn how to care for his trees, believing that care is half the battle in our business.

At this point the apple-growers present compared notes as to the amount of fruit destroyed by the recent severe wind-storm. Mr. Platt was of the opinion that there was still quite a crop left on the trees. Mr. Merriman said that the wind had taken off two-thirds of his crop and that the drought of the past season had caused a heavy dropping of the fruit besides. Mr. Gold thought that in his section the wind took off only the imperfect fruit. Such trees as have flexible limbs suffer the least in such storms.

Professor A. G. Gulley, of the Connecticut Agricultural College, was next called upon. He told of his experiences in spraying in the apple orchard, and that during the past season the work had seemed to have little effect upon insect pests. Professor Gulley called attention to the value of the Wagener apple, which bears young, sometimes at the age of three years, and bears profusely. It is a good variety to plant as a "filler" in orchards.

Mr. J. H. Hale was asked to speak on the question of plum-growing. Mr. Hale said: "We know that the Japan varieties will succeed on a greater variety of soils than almost any other fruit. They do well even on the poorest soil. Sometimes, however, the trees die suddenly, and apparently without any good cause." He recommended cutting back the trees severely. Very few growers do this, but in order to secure profitable crops, it must be done.

The fruit should be carefully thinned also, to secure high quality. Japans vary greatly in quality, one season with another. The demand in our markets for good plums is steadily increasing. Head your plum trees low, cutting back the limbs every spring.

The session closed with the reading of a paper by E. R. Newell, of Southington, on "Birds of Interest to the Farmer."

EVENING SESSION

The exhibition was open to the public Thursday evening and a delightful meeting was held, the presence of many prominent people of the city adding greatly to the pleasure of the occasion.

President Merriman called the company to order and in well-chosen words called upon ex-President J. H. Hale to preside during the evening.

Mayor F. P. Burr, of Middletown, was introduced as the first speaker, and he gave a very pleasant address of welcome.

Mr. Hale, in responding, thanked the mayor and the people of Middletown for their interest in this meeting, and said further: "We must have the coöperation of the city folks. You need to understand the value and usefulness of these fine fruit products. That is the aim of this Society — to aid in the development of the fruit-growing interests of our state and to educate both those who are the producers and those who are the consumers of fruit products. The Society stands, as this exhibition well illustrates, for perfection in fruits. To attain this perfection we have many difficulties to overcome, and co-operative effort is of the utmost necessity. Our fruit seasons are changing. Fresh fruits of almost every kind are to be found in our markets the year round. The trade and the demand, too, are changing and the people are being educated to a finer knowledge and appreciation of good fruit. No small part of these changes are due to the influence of horticultural societies." Mr. Hale then referred to great fruit-growing interests of other sections of America, notably the mountain regions of West Virginia and Maryland, where the peach and the apple are leading crops.

A pleasing vocal duet was rendered by Mrs. Carroll and Miss Tucker, of Middletown. Hon. J. M. Hubbard, of Middletown, spoke next, followed by Prof. W. O. Atwater, of Wesleyan University. Mrs. Carroll and Miss Tucker responded again and sang very sweetly.

Other speakers of the evening were Gaston T. Hubbard, of the Rogers & Hubbard Company, Ex-Mayor Briggs and Rev. Mr. Mapleson, of Middletown. About 250 enjoyed the exercises.

SECOND DAY

During the forenoon the exhibits were judged and premiums awarded. The following acted as judges: On single plates of apples, R. A. Moore; collections of apples, J. H. Hale; collections of pears and grapes, E. M. Ives; single plates of pears, J. H. Merriman; single plates of grapes, Geo. S. Butler; peaches, plums and quinces, Prof. A. G. Gulley; canned fruits and fruit juices, Mrs. H. C. C. Miles and J. C. Eddy; Nuts, N. S. Platt.

Very careful work was necessary on the part of the committees, and as a result of this work awards to the amount of $319.25 were announced.

The following were among the—

WINNERS OF PREMIUMS

FIRST DIVISION—COLLECTIONS

Class 1. Best General Collection of Fruits.
C. I. Allen, Terryville.

Class 2. Best Collection, 20 Varieties Apples.
S. G. Cook, Branford and Connecticut Agricultural College.

Class 3. Best Collection, 12 Varieties Apples.
Connecticut Agricultural College; Robert Hubbard, Middletown; G. F. Platt, Milford.

Class 4. Best Collection, 5 Varieties Apples for Market.
Connecticut Agricultural College; E. Manchester, Bristol.

Class 5. Best Collection, 6 Varieties Pears.
E. Manchester, Connecticut Agricultural College, and H. I. Nettleton, Durham.

Class 6. Best Collection, 12 Varieties Grapes.
C. I. Allen and Connecticut Agricultural College.

Class 7. Best Collection, 6 Varieties Grapes.
A. E. Plant, Branford, and C. I. Allen.

SECOND DIVISION

CLASS 1. SINGLE PLATES, APPLES.

Baldwin—E. Rogers, New Britain; L. A. Smith, Higganum; J. H. Merriman, Southington, and H. C. C. Miles, Milford.

Rhode Island Greening—Dennis Fenn, Milford; E. Rogers, H. C. C. Miles and A. A. Moses.

King—E. J. Roberts, Middletown; E. Rogers, L. A. Smith and S. G. Cook.

Northern Spy—E. J. Roberts, Middletown; E. Rogers and H. C. C. Miles.

Roxbury Russet—Dennis Fenn; H. B. Curtis, Cheshire; S. G. Cook and F. E. Boardman.

Fall Pippin—Henry Gilbert, Middletown, and F. B. Bailey, Durham.

Peck's Pleasant—W. H. Mansfield, West Hartford; L. A. Smith and Robert Hubbard.

Hurlburt—E. Manchester, F. E. Boardman and C. I. Allen.

Fallawater—F. B. Ashton, Middletown, and H. I. Nettleton.

Maiden Blush—L. A. Smith.

Hubbardston—H. B. Curtis, E. Rogers and Connecticut Agricultural College.

Gravenstein—J. M. Whittlesey.

Wagener—W. H. Mansfield.

Twenty-Ounce—J. M. Whittlesey and C. I. Allen.

CLASS 2. SINGLE PLATES, PEARS.

Bosc—H. O. Griswold, West Hartford; J. E. Andrews and H. I. Nettleton.

Seckel—Lyman Payne, Portland; E. Manchester, Orrin Gilbert and Abner Trask.

Lawrence—E. C. Warner, Fair Haven; E. Manchester and H. I. Nettleton.

Louise Bonne—H. O. Griswold and A. B. Pierpont, Waterbury.

Anjou—E. C. Warner, E. Manchester and W. H. Mansfield.

Sheldon—Orrin Gilbert, E. C. Warner and H. B. Curtis.

Kieffer—S. G. Cook and S. A. Smith, Clintonville.

Winter Nelis—H. C. C. Miles.

Clairgeau—Butler & Jewell, Cromwell, and H. I. Nettleton.

Bartlett—E. C. Warner and S. A. Smith.

Howell—F. B. Bailey and A. B. Pierpont.

Buffum—E. C. Warner and C. I. Allen.

CLASS 3—SINGLE PLATES, GRAPES.

Concord—C. I. Allen, W. H. Mansfield and Thomas Gilbert.

Niagara—R. A. Moore, Kensington, A. E. Plant and H. O. Griswold.

Worden—C. I. Allen, Thomas Gilbert, H. B. Curtis and Abner Trask.

Catawba—F. B. Bailey, A. A. Moses and Connecticut Agricultural College.
Brighton—Connecticut Agricultural College and C. I. Allen.
Delaware—C. I. Allen.
Diana—H. O. Griswold, E. R. Newell, Southington, and Charles Leigey, Berlin.
Isabella—E. C. Warner.
Diamond—Charles Leigey.

CLASSES 4 AND 5. PEACHES, PLUMS AND QUINCES.

Crosby—H. B. Buell, Eastford; A. A. Moses, Lyman Payne and W. M. Tyler, Waterbury.
Fox Seedling—J. R. Barnes, Yalesville; A. E. Plant and J. H. Hale.
Late Crawford—J. R. Barnes, E. C. Warner and E. J. Hough, Yalesville.
Stump—E. J. Hough, C. E. Lyman, Middlefield, and Robert Hubbard.
Elberta—J. E. Andrews, W. M. Tyler and C. E. Lyman.
Oldmixon—W. M. Tyler, F. B. Bailey and J. E. Andrews.
Wheatland—S. G. Cook, W. M. Tyler, H. I. Nettleton and F. E. Boardman.
Wonderful—William Tyler and E. C. Warner.
Keyport White—E. C. Warner and G. F. Platt.
Reine Claude—C. I. Allen.
Damson—C. I. Allen.
Champion—H. I. Nettleton.
Orange—C. I. Allen and H. B. Buell.
Meech—H. C. C. Miles.

THIRD DIVISION

CLASS 1. BEST COLLECTION CANNED FRUITS.

Mrs. H. Bushnell, Berlin; Mrs. Harvey Jewell, Cromwell, and J. E. Andrews, New Britain.

CLASS 2. BEST COLLECTION PICKLES.

Mrs. Harvey Jewell.

CLASS 3. BEST COLLECTION JELLIES.

F. B. Bailey.

CLASS 4. BEST SINGLE CANS FRUIT.

Peaches—Mrs. H. Bushnell, J. E. Andrews, Mrs. Orrin Gilbert, Mrs. Harvey Jewell, Cromwell, and Mrs. H. B. Curtis.
Plums—Mrs. H. Bushnell and Mrs. Harvey Jewell.
Berries—Mrs. Harvey Jewell, Mrs. H. B. Curtis, Mrs. Orrin Gilbert and Mrs. H. Bushnell.
Pears—J. E. Andrews and Mrs. Orrin Gilbert.

Single Cans, Jellies.

Mrs. H. B. Curtis and Mrs. Harvey Jewell.

Single Cans, Pickles.

J. E. Andrews, Mrs. H. B. Curtis and Mrs. Harvey Jewell.

Fruit Juices.

C. I. Allen and Mrs. Harvey Jewell.

The closing session of the meeting was taken up with discussions of the awards and the consideration of several important topics. There was a fair attendance of members.

Mr. Hale called attention to a new peach trouble, the "peach-leaf mite," which causes a copper-colored appearance of the leaves and promises to be quite injurious to the foliage. Professor Britton thought the kerosene and water mixture would be found useful in destroying this pest, but further study was needed to establish this. Reports of the effects of the season's drought upon fruit crops were given by a number of growers. Mr. G. F. Platt said drought had no terrors for him; constant cultivation will overcome it and a dry season is to be preferred, as the rot is much less prevalent. S. G. Cook said the drought had injured the peach crop in his section, but apples were fine.

Prof. C. S. Phelps, of Storrs, was the last speaker of the afternoon. He referred to the fact that the advantages of fruit culture are attracting shrewd business men to make investments in our hill towns. Commercial fruit-growing of this kind is coming and we, as farmers, should be quicker to see these opportunities ourselves and not allow others to reap all the profits.

After passing a hearty vote of thanks to Middletown friends, and especially to Bro. Orrin Gilbert, for their kind assistance the meeting was adjourned.

Notes on Certain Diseases of Plants Recently Observed

BY W. C. STURGIS, PH.D.

Sooty Spot of Apples.—Doubtless everyone who grows Rhode Island Greenings or Newtown Pippins is familiar with the appearance of fruit affected with this trouble. It is well illustrated in Plate I. The fungus causing it was described by the writer in the Twenty-first Annual Report of the State Experiment Station. It is a very widely spread trouble, occurring in all localities and to a greater or less extent every year, though its spread is naturally more rapid in a damp season than when the weather is dry. Its effect upon the fruit is entirely superficial, that is, it is limited to the skin of the apple and does not penetrate or injure the flesh. It does, however, render the fruit unsightly and therefore detracts from its market value.

This superficial habit of the fungus renders its control by fungicides so simple a matter that it is astonishing that more growers of apples do not adopt the practice of regular and systematic spraying. As shown in the Report above referred to, trees sprayed with Bordeaux mixture not only yielded a larger crop of clean fruit than trees not sprayed, but the fruit from the former showed that the fungicide acted as a preservative, the "keeping quality" of sprayed fruit being far superior to that of the unsprayed fruit.

The sooty spot occurs on many varieties of apples and pears.

Crown Gall of Peach.—This peculiar disease, illustrated in Plate 2, is unquestionably on the increase in Connecticut. It was not more than five years ago that my attention was first called to it. To-day it can probably be found in every peach orchard in the state. It is an insidious disease, working below the surface, revealing its presence only in the gradual decline of vigor on the part of its victim, not easily reached by fungi-

cides, and extremely contagious. Professor Toumey, formerly of the Arizona Experiment Station, has recently made a careful and thorough study of the disease as it occurs on almond trees. He has shown that it is caused by a minute organism, occurring in the soil and related to that which causes the familiar "club-root" of turnips and allied plants. He has furthermore proved that it can be transferred to a healthy tree from bits of

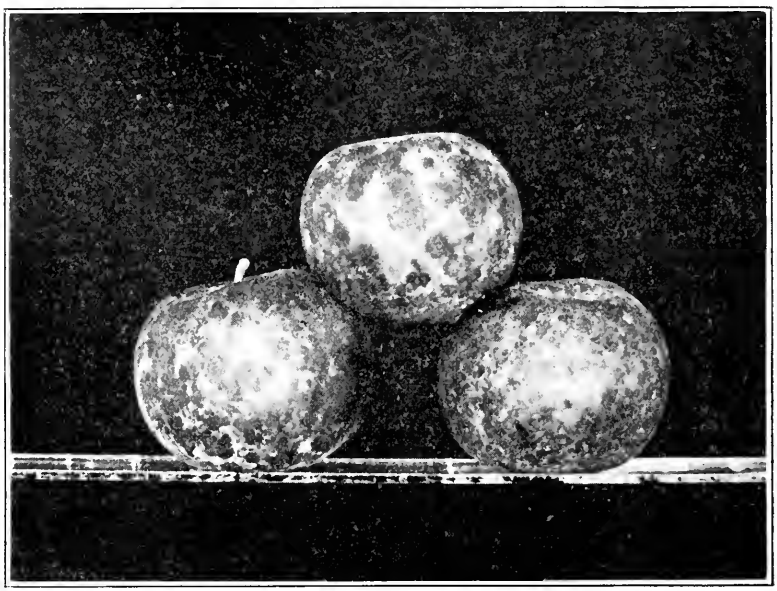


FIG. 1. SOOTY SPOT OF APPLE

the galls remaining in the soil from which a diseased tree has been removed, so that in case a diseased tree is dug up carelessly the disease is certain to be spread broadcast when the plow, harrow, or cultivator is run over the spot. The greatest care should therefore be exercised in digging up such a tree not to break off any of the galls; the tree should be burned at once and upon the very spot whence it came. Of course all nursery stock showing the crown-gall should be destroyed by fire.

The disease can be kept in check by examining the trees once a year, cutting off the galls, and covering the wound with

a paste composed of copper sulphate and lime, but as a rule it will be found more satisfactory to destroy diseased trees and to guard against a fresh importation of the trouble from the nursery.

Foot-Rot of Peach.—Occasionally the student of plant diseases is confronted with what appears to be a hitherto undiscovered disease. It may be actually new, or it may be merely

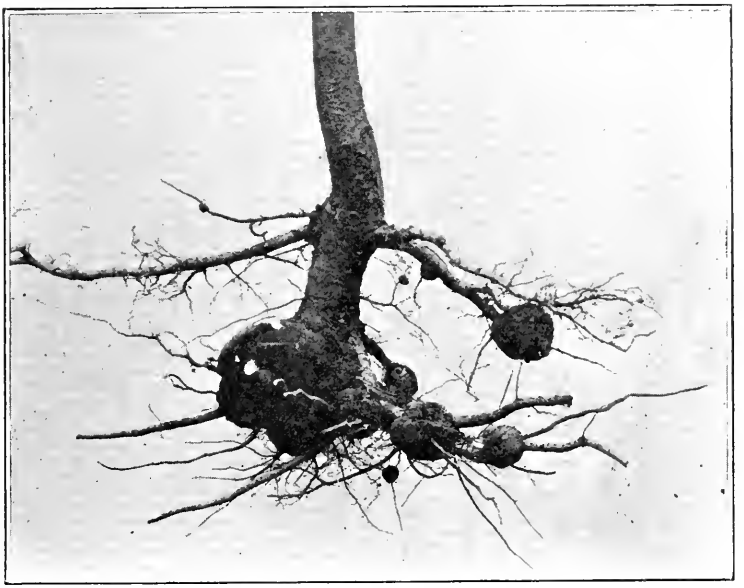


FIG. 2. CROWN-GALL OF PEACH

a peculiar phase of an old trouble. Such is the disease of peach trees which I have called *foot-rot*, and which is illustrated in Plate 3. It made its appearance very suddenly a year or two ago, and since that time has spread with alarming rapidity. The diseased trees show, above ground, symptoms similar to those accompanying the crown-gall; that is, a gradual decrease in vigor. But these symptoms are much more pronounced than in the case of crown-gall, and the disease runs its course much more rapidly. Thus, the tree in the illustration referred to appeared normal and healthy one season; the next spring it put out leaves, but the latter failed to develop

FIG. 3. FOOT-ROT OF PEACH

properly and in June of the same year, when this photograph was taken, the death of the tree was evidently imminent. Below ground there are no signs of galls accompanying this trouble, but just above the surface the trunk is swollen, often to twice its normal size, and the bark is rough and cracked. The wood of this portion is soft, almost spongy in places, and more or less decayed, so that the trunk is greatly weakened and frequently breaks under the force of the wind. Immediately below the swollen portion the trunk is contracted, forming a sort of collar, and it is here that the break occurs. A tree which still appears fairly vigorous may sometimes be broken off at this point merely by a strong push.

It is a peculiarly sporadic disease; that is, one orchard may show scores of trees affected with it, while an adjoining orchard exhibits no trace of it. Even in the same orchard the diseased area may be distinctly limited, although nearly every tree in that area has succumbed. In one orchard which I visited the remains of an old stone wall divided the diseased trees from the healthy ones. The trees were all of the same age and variety and had received the same culture, yet on one side of the wall hardly a tree was standing, while on the other not a single tree was affected. Practically nothing has yet been done toward determining the nature and cause of this disease. Certain facts indicate that it may be due to an organism identical with or similar to that which induces crown-gall. Diseased material has been preserved for study, but meanwhile it is of the utmost importance that peach-growers should watch for the first signs of this new trouble and report its appearance at once to the Experiment Station or to me personally. The total destruction of the diseased trees by fire is the only safe proceeding at present.

Cane-Gall of Raspberry.—This disease, figured in Plate 4, has been sent in to me from several localities in the state during the past year. The illustration shows admirably the characteristic symptoms of the disease,—rough, whitish masses of tissue of a cheesy consistency bursting through the bark. It is unlike any disease of raspberries with which I am acquainted, but the general character of the diseased tissue recalls that of the galls formed sometimes on the roots of

raspberry plants affected with crown-gall. It is possible that these two troubles, as well as the crown-gall and foot-rot of the peach, may all be caused by the same organism, or by one nearly related to it. Growers of raspberries are urgently requested to watch for this cane-gall and to send me fresh specimens if it is found.

FIG. 4. CANE GALL OF RASPBERRY

The New Law Concerning Insect Pests

AT the annual meeting of the Connecticut Pomological Society at Hartford, February 7, 1901, resolutions were adopted calling attention to the destruction caused by the San José scale and recommending that a law be enacted to protect the fruit interests of the state from this dreaded pest. A bill was introduced into the legislature and thoroughly discussed at a hearing before the joint Committee on Agriculture on March 19. The discussion led to the drafting of a substitute bill which met the views of the fruit-growers represented and of the committee. This was passed on June 4 and approved by the Governor on June 10. The text of the law is given below.

Since the law went into effect the Board of Control of the Connecticut Experiment Station have appointed Prof. W. E. Britton, horticulturist at the Station, to be state entomologist, and the provisions of the law are being carried out. The wisdom of this work under the state control seems already proved beyond question.

CHAPTER CXXII

AN ACT

CONCERNING INSECT PESTS

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. The Board of Control of the Connecticut Agricultural Experiment Station, at New Haven, shall designate and appoint a man qualified by scientific training and practical experience to be state entomologist during the pleasure of the board, and to be responsible to said board for the performance of his duties as prescribed in this act. The state entomologist shall have an office at the Experiment Station in New Haven, but shall receive no compensation other

than his regular salary as a member of the station staff. He may appoint such a number of deputies, not exceeding three, as he may deem necessary or expedient.

SEC. 2. It shall be the duty of the state entomologist, either personally or through his deputies, to visit any orchard, field, garden, nursery, or store-house, upon the request of the owner, to advise treatment against pests. He may inspect any orchard, field, or garden, in public or private grounds, which he may know or have reason to suspect is infested with San José scale or any other serious pests; may from time to time issue such circulars and bulletins as in his judgment are needed to convey information about pests, which publications may be issued as bulletins of the said Experiment Station; may also conduct such experiments and investigations regarding injurious insects as will tend toward a better understanding of them and the remedies for their attacks; may diffuse such information by means of correspondence, lectures, and published matter; and may employ such assistance in his office, laboratory, or in the field, and purchase such apparatus and supplies as he may deem necessary for the successful prosecution of his duties. He shall keep a detailed account of expenses and shall publish each year a report of such expenses, and of the work done under this act.

SEC. 3. All nursery stock shipped into the state from some other state, country, or province, shall bear on each box or package a certificate that the contents of said box or package have been inspected by a state or government officer and that said contents appear to be free from all dangerous insects or diseases. In case nursery stock is brought within the state without such a certificate, the consignee may return it to the consignor at the latter's expense, or may call the state entomologist to inspect the same and deduct the costs of such inspection from the consignor's bill for such stock. This section shall be deemed to be a part of every contract made in this state for the sale of nursery stock to be shipped into this state.

SEC. 4. All nurseries or places in the state where nursery stock is grown, sold, or offered for sale, shall be inspected at least once a year by the state entomologist or one of his deputies, and if no serious pests are found, a certificate to that effect may be given. If such pests are found, the owner shall take

such measures to suppress the same as the state entomologist shall prescribe. If such measures are not immediately taken by the owner of such nursery or place, such certificate shall be withheld, and any nurseryman who does not hold such a certificate after the first annual inspection as herein prescribed, who shall sell or otherwise dispose of nursery stock in the state, shall be fined not more than fifty dollars. The form of certificate, as well as the season for inspecting nurseries, may be determined by the state entomologist. The state entomologist or any of his deputies shall at all times have the right to enter any public or private grounds in the performance of any duty required by this act.

SEC. 5. The sum of three thousand dollars annually for two years is hereby appropriated for carrying out the provisions of this act, and the comptroller is hereby directed to draw his orders therefor quarterly on the treasurer in favor of the treasurer of the Connecticut Agricultural Experiment Station, who shall hold the same subject to the order of the state entomologist.

SEC. 6. This act shall take effect July 1, 1901.

Approved June 10, 1901.

LIST OF MEMBERS OF THE CONNECTICUT POMOLOGICAL SOCIETY

1901

Adams, Joseph, Westport.
Adler, Leon W., New York City.
Albison, Joseph, South Manchester.
Allen, Chas. D., Mt. Carmel Center.
Allen, Chas. I., Pequabuck.
Allen, W. F., Jr., Salisbury, Md.
Andrews, J. E., New Britain.
Ashton, Frank B., Middletown.
Atwater, Edwin B., New Haven.
Atwater, E. A., Cheshire.
Atwater, E. B., Plantsville.
*Ayer, E. C., Unionville.
Babcock, G. P., Rockville.
Babcock, H. J., Rockville.
Bailey, F. B., Durham.
Baldwin, N. S., Meriden.
Baldwin, Walter H., Cheshire.
Ballou, Prof. H. A., Storrs.
Barber, C. W., New Britain.
Barber, Henry A., Danbury.
Barker, N. C., Lebanon.
Barnes, A. G., New Milford.
Barnes, J. Norris, Yalesville.
Barnes, John R., West Cheshire.
Barnes, J. J., Southington.
Bartholomew, W. I., Putnam.
Bass, Lucien, Scotland.
Bassett, George E., Clintonville.
Batty, H. P., New Britain.
Beach, A. S., Plattsville.
Beach, Prof. S. A., Geneva, N. Y.
Beach, Z. P., Wallingford.
Beard, Wm. T., Shelton.
Beard, O. G., Shelton.
Beckwith, G. C., Nepaug.
Beers, F. H., Hawleyville.
Beers, S. Perry, Greenfield Hill.
Benedict, F. C., West Hartford.
Benham, Leonard M., Highwood.
Benham, Wilbur H., Highwood.
Bernhard, Albert, Meriden.
Blakeslee, G. N., Clintonville.
Boardman, F. E., Little River.
Blakeman, J. H., Oronoque.
Bliss, Ethelbert, Wilbraham, Mass.
Bolles, C. P., Wilbraham, Mass.
Bradley, F. N., Derby.
Brainerd, A. H., Thompsonville.
Brainerd, M. N., Southington.
Brewer, C. S., Hartford.
Britton, Prof. W. E., New Haven.
Brockett, Hobart J., Montowese.
Bronson, N. S., New Haven.
Brown, J. S., Vernon.
Brownson, S. B., Shelton.
Buckingham, C., Southport.
Buell, H. B., Eastford.
Burr, W. H., Westport.
Bushnell, Huber, Berlin.
Bushnell, Mrs. Huber, Berlin.
Butler, George E., Meriden.
Butler, George S., Cromwell.
Callahan, Thos., Newington.
Carnell, A. D., Bristol.
Case, G. J., Canton.
Chamberlain, L. P., Storrs.
Chillingworth, Felix, New Haven.
Church, F. J., Pleasant Valley.
Clarke, D. N., Westville.
Clark, George M., Higganum.
Clinton, E. B., Clintonville.
Coe, Ernest F., New Haven.
Coe, W. T., Durham Center.
Coleman, M. L., Seymour.
Coleman, M. P., South Coventry.
Colton, L. F., Hartford.
Comstock, G. C., Norwalk.
Conn. Agricultural College, Storrs.
Cook, Reuben T., Meriden.
Cook, S. G., Branford.
Craw, Alanson, Waterville.
Curtis, H. B., Cheshire.
Curtis, Mrs. H. B., Cheshire.
Curtis, Robert W., Stratford.
Davidson, C. M., Cincinnati, O.
Davis, Chas. T., Middletown.
Davis, E., Branford.
Davis, Richard, Middletown.
Dearden, Greenwood, Tolland.
De Bogart, F. Van, Bridgeport.
Dewing, Chas. J., Litchfield.
Dimon, Wm. B., Shelton.

Doolittle, Arthur H., Westville.
Doolittle, H. M., Meriden.
Doolittle, S. B., Wallingford.
Dowd, Frank C., Madison.
Downs, W. S , Derby.
Dunham, H. C., Middletown.
Eddy, J. C., Simsbury.
Eddy, John S., Unionville.
Elsworth, Frederick, Hartford.
Elwood, J. F., Green's Farms.
Eno, R. B., Weatogue
Ensign, F. H., Silver Lane.
Ensign, E. R., Silver Lane.
Expansive Tree Protector Co., Rochester, N. Y.
Fairchild, H. L., Nichols.
Fanton, I. C., Westport.
Farnham, A. N., New Haven.
Fawthrop, Walter, Cromwell.
Fenn, Dennis, Milford.
Ferson, E. B., Chicago, Ill.
Flagg, Chas. H., West Hartford.
Flint, George W., Storrs.
Forbes, J. S., Burnside.
Francis, J. H., Meriden.
French, W. H., Wolcott.
Frisbie, Martin M., Southington.
Frisbie, M. W., Southington.
Frost, Frank M., West Cheshire.
Fugazzi, Chas. S., Cincinnati, O.
Gates, W. F., Willimantic.
Gaylord, E. F., Bristol.
Gaylord, E. W., Bristol.
Gilbert, Henry, Middletown.
Gilbert, Orrin, Middletown.
Gilbert, Mrs. Orrin, Middletown.
Gilbert, Thomas, Middletown.
Gillette, E. Samuel, Bristol.
Gold, T. S., West Cornwall.
Goldsborough, H. H., Willimantic.
Goldsmith, H. G., Branford.
Goodwin, H. H., Cheshire.
Gordon, Mrs. Robert, Shelton.
Gould's Mfg. Co., Seneca Falls, N. Y.
Gridley, E. E., New Britain.
Griffith, Geo. H., Bristol.
Griswold, H. O., West Hartford.
Griswold, J. B., Newington.
Griswold, S. A., West Hartford.
Griswold, W. F., Rocky Hill.
Griswold, S. P., West Hartford.
Groesbeck, F. O., Hartford.
Gulley, Prof. A. G., Storrs.
Gulley, Roy C., Storrs.
Guyer, John, Milford.
Hale, G. H., South Glastonbury.
Hale, J. H., South Glastonbury.
Hale, Mosely, South Glastonbury.
Hale, Stancliff, South Glastonbury.
Hall, Chas. H., Cheshire.
Hall, G. D., Wallingford.
Hall, G. H., Manchester.
Hall, Linus H., Wallingford.
Hall, Wilbur H., Wallingford.
Hammond, G. S., West Goshen.
Hannah, A. J., Bristol.
Hannah, W. L., Bristol.
Hart, Mrs. S. A., Kensington.
Hart, G. W., Unionville.
Hersey, G. M., Hartford.
Hill, S. B., Waterbury.
Hilliard, H. J., Black Hall.
Holmes, John E., Stratford.
Hopson, G. A., Wallingford.
Hopson, F. S., Bridgeport.
Hotchkiss, B. S., Waterbury.
Hotchkiss, Chas. T., W. Cheshire.
Hotchkiss, D. B., Prospect.
Hotchkiss, Chas. M., Cheshire.
Hough, E. J., Yalesville.
Hough, George E., Yalesville.
Hough, Joel R., Wallingford.
Hough, Eli S., Poquonock.
Hoxie, George H., N. Franklin.
Hoyt, Edwin, New Canaan.
Hoyt, James, New Canaan.
Hubbard, Clement S , Higganum.
Hubbard, Elmer S., Higganum.
Hubbard, J. M., Middletown.
Hubbard, Robert, Middletown.
Hunt, W. W., Hartford.
Innis, A. C., Stratford.
Ives, E. M., Meriden.
Ives, C. P , New Haven.
Jackson, George O., Colchester.
Jeffrey, H. L., Woodbury.
Jenkins, Dr. E. H., New Haven.
Jennings, E. G., Plattsville.
Jennings, Geo. P., Green's Farms.
Jennison, E. F., Hartford.
Jerome, F. M., New Britain.
Jewell, Harvey, Cromwell.
Jewell, Mrs. Harvey, Cromwell.
Johnson, Dr. F. E., Mansfield Depot.
Kelsey, Charles B., Hartford.
Kelsey, Frederick, Higganum.
Kenney, J. P., Hockanum.
Kilbourne, Harry N., Litchfield.
King, N. N., Thompsonville.
Kingsbury, Andrew, Coventry.
Kirkham, John S., Newington.
Knapp, M. C., Danbury.
Koons, Prof. B. F., Storrs.
Lapsley, Arthur B., Pomfret Center.
Lathrop, E. B., Vernon Center.
Latimer, F. C., New Britain.
Lee, W. S., Hanover.

Lewis, Frederick J., Highwood.
Liegey, Charles, Beckley.
Lobdell, J. C., Greenfield Hill.
Loomis, John, South Manchester.
Lord, J. W., Warehouse Point.
Loury, H. P., Whigville.
Lowery, L. L., Whigville.
Loverin, D. P., Huntington.
Lyman, C. E., Middlefield.
Lyman, D. A., Willimantic.
Manchester, George C., Bristol.
Manchester, E., Bristol.
Manchester, H. G., West Winsted.
Manchester, Robert, Bristol.
Manchester, E. F., Bristol.
Mansfield, Wm. H., W. Hartford.
Mansfield, Peter, West Hartford.
Martin, J. A., Wallingford.
Matthews, E. A., Bristol.
May, W. B., Hartford.
McCall, E. H., Lebanon.
McCormick, Samuel, Waterbury.
Meachen, George, Stratford.
Merriman, J. H., New Britain.
Merwin, Walter L., Milford.
Mexcur, George, Bloomfield.
Miles, H. C. C., Milford.
Miller, F. B., Bloomfield.
Miller, W. H., Bristol.
Miller, Mrs. Wallace H., Bristol.
Mills, D. E., Bristol.
Molumphy, J. T., Berlin.
Monson, W. B., Mt. Carmel.
Moore, Charles, Southington.
Moore, H. S., Southington.
Moore, R. A., Kensington.
Morgan, E. P., Cheshire.
Morse, C. Z., Shelton.
Morse, H. C., Wallingford.
Morse, J. J., East Berlin.
Morton, E. G., East Windsor.
Moses, A. A., Unionville.
Moss, Julius W., Cheshire.
Munson, W. A., Huntington, Mass.
Nason, George K., Willimantic.
Nettleton, H. I., Durham.
Newell, E. R., Southington.
Noble, John B., East Windsor.
Norton, John, Kensington.
Orcutt, P. C., Clintonville.
Parker, John B., Jr., Poquonock.
Patterson, B. C., Torrington.
Patterson, S. A., Stratford.
Payne, George K., Portland.
Payne, Lyman, Portland.
Pease, Simeon, Greenfield Hill.
Peck, A. C., West Cheshire.
Peck, Clifton, Yantic.
Peck, F. J., Mt. Carmel.
Peck, W. N., Mt. Carmel Center.
Petremont, Mrs. E., Shelton.
Pero, Louis, South Glastonbury.
Perry, F. L., Bridgeport.
Pierpont, A. B., Waterbury.
Pierpont, A. J., Waterbury.
Plant, A. B., Branford.
Plant, Albert E., Branford.
Platt, Frank N., Milford.
Platt, G. F., Milford.
Platt, N. D., Milford.
Platt, N. S , New Haven.
Platt, William F., Milford.
Plumb, James, Stratford.
Pomeroy, C. B., Willimantic.
Post, Prichard E., Essex.
Prior, J. E., Moosup.
Putnam, J. H., Litchfield.
Reinhold, R. W., Mill Brook.
Rice, W. B., Meriden.
Roberts, C. S., Riverton.
Roberts, E. J., Middletown.
Roberts, S. W., Middletown.
Robertson, L. J., Hartford.
Rogers, E., New Britain.
Root, L. C., Farmington.
Root, T. H., Farmington.
Rugg, J. H., Stratford.
Russell, Dr. Gurdon W., Hartford.
Russell, S., Jr., Middletown.
Ryder, G. B., Oronoque.
Saunders, A. W., Forestville.
Savage, Clarence H., Storrs.
Savage, H. E., East Berlin.
Schwink, J. G., Meriden.
Scranton, Charles W., New Haven.
Seeley, Edward, Plattsville.
Sharp, A. G., Richmond, Mass.
Shedd, G. V., Preston.
Shelton, Mrs. Dora A., Shelton.
Shepardson, W. M., Middlebury.
Sherwood, J. H., Southport.
Sherwood, N. H., Southport.
Sisson, H. B., Hamburg.
Skinner, M. G., Higganum.
Sloper, A. J., New Britain.
Smith, Andrew D., Litchfield.
Smith, George R., Cromwell.
Smith, G W., Hartford.
Smith, H. P., North Haven.
Smith, J. A., Hartford.
Smith, J. B , Berlin.
Smith, J. Elliott, Wolfville, Nova Scotia.
Smith, Dr. L. A., Higganum.
Smith, L. P., Lebanon.
Smith, S. A., Clintonville.
Spicer, G. W., Deep River.
Splettstoeszer, Herman, Kensington.

Stadtmueller, F. H., Elmwood.
Staples, G. W., Hartford.
Sterling, S. P., Hamburg.
Sternberg, A. C., West Hartford.
Stevens, N. S., East Canaan.
Stevens, W. W., Clintonville.
Stone, D. E., Cheshire.
Strumpf, George, Burnside.
Sturgis, Dr. W. C., New Haven.
Sturges, W. S., Shelton.
Sturges, Mrs. W. S., Shelton.
Taylor, Edward J., Southport.
Terrell, C L., Cheshire.
Thomas, T. L., Forestville.
Thomas, W. T., Groton.
Thomson, Paul, West Hartford.
Thrall, A. O., Rockville.
Tillinghast, G. G., Vernon.
Tillotson, H. D., West Hartford.
Todd, E. A., Waterbury.
Trask, Abner, Silver Lane.
Trask, W. W., Silver Lane.
Tucker, F. E., Vernon.
Turney, Oliver, Fairfield.
Tuttle, L. P., North Haven.
Tyler, W. M., Waterbury.
Valentine, H. E., Cheshire.
Van Alstyne, E., Kinderhook, N. Y.
Vibberts, L. A , New Britain.
Wakeman, S. B., Saugatuck.
Waller, W. E., Trumbull.
Wander, Eugene A., Hartford.
Warner, E. C., Fair Haven.
Warren, W. A., Storrs.
Watrous, J. L., Meriden.
Webster, George, Jr., Rockville.
Webster, M. C., New Britain.
Wells, Dudley, Wethersfield.
Wells, S. M., Wethersfield.
Werking, Adolph, Plantsville.
Whitney, C. A., Upton, Mass.
Whittlesey, H. A., Newington.
Whittlesey, J. M., Morris.
Wilcox, J. J., Meriden.
Wilcox, W. E., Meriden.
Wilcox, R. C. & Sons, Guilford.
Wiley, C. H., Hartford.
Williams, A. W., New Britain.
Williams, R. W., Bristol.
Wadsworth, A. R., Farmington.
Wolcott, E. R., Wethersfield.
Wood, O. S., Ellington.
Wooding, M. N., Hamden.
Woodruff, R. H., Guilford.
Woodward, R. W., Franklin.
Yale, Allan R., Meriden.
Yale, A. C., Meriden.
Yale, C. E., Yalesville.
Yale, J. H., Meriden.
Young, C. O., Yalesville.
*Zorn, G. B., Mt. Carmel.

---

*Signifies the death of a Member.