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TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY.

REPORTS OF THE OFFICERS

FOR THE YEAR ENDING NOVEMBER 1, 1899,

AND

ESSAYS FOR SEASON OF 1900.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
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26037

WORCESTER COUNTY
HORTICULTURAL SOCIETY,

For the Year Ending, Nov. 1, 1899.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the

Worcester County Horticultural Society:

In presenting for your consideration the Annual Report for the year just closed, I desire to refer to the weather conditions of the year. We have had a long season: six full months there were no signs of frost. The long-continued drouth, which it was thought would prove disastrous to the growers of fruit and vegetables, has been a genuine surprise. The specimens shown at our Exhibitions of Corn, Potatoes, Squashes, Beans and Cauliflower were handsome and the quality very good. The season has proved to be a very favorable one for Sweet Potatoes; J. Lewis Ellsworth showing fine specimens and of good quality; Mr. A. F. Brown of East Douglas, has grown them in quantity and as large and of as good quality as I have ever seen from the South.

This is not the usual bearing year for Apples, but at no time in an odd year has the exhibition of Apples been better than this. Pears have been fairly good and the exhibition of Seedling Peaches very fine. From three sections of the city there have been Peaches shown that were grown by children, bearing the fifth year from the planting of the stone; the size, shape, color and quality were very good. Such effort on the part of the children should be encouraged and I was pleased to find

this much interest on their part in growing and caring for trees that bore such luscious fruit.

September—Mavida Fiske, daughter of David Fiske, placed upon exhibition a quart of Prince Albert Currants.

Of Grapes, we had immense crops, the exhibitions large and the specimens shown very fine. Of Quinces, the same may be said, while it is generally claimed that Quinces yield more and are better in a year when the rain-fall is great, there has been no better showing than this season since my connection with the Society of twenty years. Currants and Gooseberries were good, with a fair crop.

The dronth commenced while Strawberries were in bloom and those who were fortunate enough to have their plants on moist or wet lands had a fairly good crop, while those on light soils were almost a failure. One of our members, Mr. Henry Rich, was situated so that he could irrigate his land and use water on his Strawberries in large quantities, the result proved the value of an unlimited supply of water, for he had as good berries in quality and quantity as one could wish for; while your Secretary at an expense for water of about one dollar and fifty cents, raised at least twenty-five dollars' worth more of berries than he would have done without the water. George McWilliams exhibited for G. Marston Whitin, a fine plate of the new Strawberry, the Talbot, a berry originating in Uxbridge, for which we awarded a Certificate of Merit last season; this, with the Record Seedling, a berry originating with S. H. Record, and shown by him the past year, I consider two very promising varieties and worthy of trial.

This has been an exceptionally fine year for Dahlias, and no complaint as to quality or quantity has reached this Society, while Sweet Peas and Asters have been nearly a failure, as in the past year or two. Nearly every day this season complaints, either personal or by mail have been received. There has hardly been a grower of this flower who has met with any success whatever, some who make no pretensions to the cultivation of Sweet Peas, more than to sow the seed and gather the blossoms they desired to use, have had quite good crops, even this year;

but such cases are rare and not numerous enough to suggest other than a general failure.

I received a letter from Rev. W. T. Hutchins, the Sweet Pea specialist, who is an acknowledged authority, suggesting that a conference be held of those who grow and are interested either for pleasure or profit, to see if some plan could be adopted whereby this disease may be cured or its ravages overcome. We decided on Thursday, August 10. In company with Mr. Hutchins, we called upon some of the growers in the forenoon. Mr. Hutchins had some theories based upon observations in other places which proved to be erroneous. The afternoon meeting was interesting, as such informal meetings generally are, but no practical remedy was suggested.

The Yellows—the disease that affects the Asters—has been prevalent this season, some growers losing four-fifths of their crop: one interesting fact is, that plants from the same lot of seed grown under glass proved healthy, while those outside were four-fifths diseased.

My attention was called early in the season to the Green Louse, which literally covered peas and beans; and before remedies were applied practically destroyed those vegetables in some gardens, and they were some of the best kept ordinarily.

Mr. George McWilliams of Whitinsville, experimented with a solution of Ivory Soap, two ounces of soap to a gallon of water; also a strong decoction of Tobacco Stems, either separate, or both together, proved effectual.

My attention was called by Mrs. P. W. Canfield, and two days later by Mr. C. B. Eaton, to a Caterpillar that was destroying the leaves of their elm trees, and while I was firmly convinced that they were the larvæ of the Elm Beetle, I was not positive, but sent the caterpillars to Amherst, and my fears in the matter were verified. I published in the papers the information I had received as to its habits and the remedy, but as this was a matter for the Parks Commission your Secretary felt that he had done all that devolved upon him and stopped there. Then again, the lawns in this city have suffered from the *Grub Worm*, that has in many instances nearly destroyed

their beauty. There seems to have been but one remedy for this evil, and that has been to spade up the grass carefully and pick them out, for any chemical so far discovered that will kill the grub will also kill the grass.

On the 21st day of September—the same as last year—the Worcester Agricultural Society, to save their State bounty, held a joint exhibition with us, and the display of fruits, flowers and vegetables was creditable to the united societies; but owing to the unfavorable weather the attendance was not as large as it should have been.

On the recommendation of your Secretary, the exhibitions usually held in the month of October were all put into one grand exhibition, which was held on the 12th day of October. It was a success; and in the opinion of our oldest members and those who have been longest identified with our Society, it was pronounced the finest display we ever had. We are indebted to Mrs. J. C. Whitin and G. Marston Whitin for their beautiful exhibit of Crotons, Caladiums, Pine Apples, Orchids and Ferns; and to Mr. Hermann F. A. Lange for his kindness in making an elaborate display of palms and decorative plants.

At one o'clock dinner was served by caterer C. S. Yeaw, at which nearly one hundred sat down. President Hadwen made a few remarks and stated that it was the fifty-fifth anniversary of the first exhibition of the Worcester County Horticultural Society. His remarks were supplemented by remarks from C. B. Knight, Samuel Hathaway, Nathaniel Paine, Calvin Hartshorn, S. A. Burgess, H. B. Watts and your Secretary.

In visiting many Grange and Farmers' Meetings during the season I have heard a great deal said about the Sutton Beauty apple. Everyone seems to want it who has not got it on his place, and I offered to provide scions for such as desired. I had calls for more than 300 setts, which have been distributed in the southerly part of this county, in Norfolk county and to some extent in Rhode Island; and I desire to thank our Mr. Geo. Calvin Rice for furnishing gratuitously the necessary scions, and also Mr. E. M. Bruce of Leominster and David Fiske of Grafton for samples of the fruit furnished me. I have

answered every demand for scions, of whatever variety that have been called for, and my thanks are due to each member of the Society who has so generously and gratuitously responded to my request for scions.

Whenever I have been solicited to furnish the children with seeds and plants in a small way I have done so, and on two occasions I have spoken to the school children on the matter of plants and their culture; they were very attentive and asked questions, which I did my best to answer. The children promised to exhibit such flowers as they grew, but with one or two exceptions they have failed to respond. I would suggest that during the winter months the boys, or such of them as so desire, be permitted to come to the Hall and be taught to graft and bud trees, and that the girls be shown how to arrange flowers and perhaps be taught some of the methods of caring properly for flowering plants; and perhaps on stated days have those from some one of the public schools, and give each of the pupils in such grades as are capable of understanding the matter instruction as outlined above. In this way we would not have so many at one time, but we could properly instruct them and give them practical lessons in such branches of horticulture as would be profitable to them in later years.

The Worcester County Market Gardeners' Association, the Worcester County Bee Keepers' Association and Massachusetts Fruit Growers' Association have held their meetings in our rooms, at which valuable papers have been read, followed by discussion. These meetings have been open to any one interested. All have tendered a vote of thanks for our hospitality. Our own winter meetings have proved interesting and were largely attended. As the essays are in print, further comment is unnecessary.

The annual meeting of the Society was held Wednesday, November 2, 1898. The meeting was called to order at 10 o'clock A. M.; President O. B. Hadwen presiding.

The records of the last annual meeting were read and approved.

Nathaniel Paine, Treasurer, read his report which was referred to the Auditors.

Adin A. Hixon, Librarian, read his report which was referred to the Committee on Publication.

Adin A. Hixon, Secretary, read his report which was referred to the Committee on Publication.

Voted, To proceed to the election of officers, a list of whom will be found on the covers of the various publications of the Society.

Voted, That the Finance Committee be authorized to borrow such sums as may be necessary to successfully conduct the affairs of the Society.

The Treasurer stated that the cash balance on hand was so small, it would be necessary to borrow money to pay premiums and suggested that payment be delayed until January 1. After some discussion it was

Voted, To pay premiums on and after December 15.

The Librarian stated that there was quite a demand for a catalogue of the Library; it was

Voted, To allow him to employ assistance if he deemed it expedient.

Voted, That the Treasurer have his report printed and ready for distribution at the annual meeting.

Upon the recommendation of the Secretary, to consolidate the October Exhibitions, it was

Voted, That the premiums usually offered during October be scheduled for one exhibition about the middle of the month, to be open from 11 A. M. until 9 P. M., and that a dinner be served. The dinner arrangements to be in the hands of the President and Secretary.

No other business offered it was voted to dissolve.

Annual Meeting of the Trustees was called immediately upon the dissolution of the meeting of the Society; President O. B. Hadwen presiding.

The first business was the election of committees and judges, a list of which will be found with the officers.

Voted, to appropriate the following sums for premiums:

Flowers and Plants,	$800 00
Fruit,	700 00
Vegetables,	500 00
Native Mushrooms,	50 00
Gratuities to persons outside of the county,	50 00

Voted, To appropriate for Winter Meetings $300.00. Hon. Henry L. Parker, Henry B. Watts, John B. Bowker, with the President and Secretary, were appointed a committee to arrange for them.

Voted, To appropriate for Library and Publications $300.00.

Voted, To dissolve.

A special meeting of the Trustees was called Thursday, April 20, 1899, at the request of the Committee on Arrangements and Exhibitions, to consider the report of said committee, recommending a Chrysanthemum Exhibition and, if favorable, to appropriate money for premiums. After considerable discussion it was voted to hold a two days' Exhibition.

Voted, To appropriate not to exceed $320.00.

Voted, To make admission free.

Voted, To dissolve.

A special meeting of the Trustees was held Thursday, July 24, called by the Secretary, to consider holding a joint Fair with the Agricultural Society, the same as last year.

Voted, To invite the Worcester Agricultural Society to hold a joint exhibition on Thursday, Sept. 21.

Voted, To dissolve.

Since publishing the additions to membership in Transactions of November 1, 1898, the following have been added:

Herbert W. Anderson, Worcester.
Mrs. Henry B. Adams, Millbury.
Ellie M. Alexander, Worcester.
Mrs. George E. Barrett, "
C. F. Boyden, Leominster.
Mrs. E. M. Bruce, "
Fred. L. Chamberlain, Worcester.
Mrs. Chas. Greenwood, "
Harold J. Greenwood, "
J. H. E. Greene, "
Myra L. Hammond, "
Francis E. Jones, "
Henry E. Kinney, "
Mrs. Mary C. P. Landers, "
George D. Leavens, Grafton.
A. C. Magoon, Boylston.
William McAllister, Whitinsville.
Mrs. Dell Morgan, Worcester.
Charles E. Richardson, Boston.
Mrs. Philander Sears, Worcester.
Mrs. Henry C. Smith, "
Fred. J. Stone, Shrewsbury.
Henry W. Thayer, Worcester.
Mrs. Isabel M. Truchon, "
George F. Wall, "
Horace M. Wright, "

In conclusion, I desire to thank the officers and members for their co-operation.

Respectfully submitted.

ADIN A. HIXON, *Secretary.*

Horticultural Hall, Worcester, Mass.

November 1, 1899.

REPORT OF THE LIBRARIAN.

To the Members of the

Worcester County Horticultural Society.

The Library has been open nearly every day the past year. Special interest has been shown for books on Budding and Grafting, particularly among the young ladies.

The following Books, Periodicals, Bulletins and Papers have been added to the Library during the year:—

United States Department of Agriculture: Year Book 1894, 1895, 1896, 1897, 1898. From Frank R. Batchelder.

Special Bulletin: Beet Industry in the United States, 1897.

Bulletin: Revised Catalogue of Fruits recommended in various sections of the United States and British Provinces. By the American Pomological Society, 1899.

Library Bulletins. Accessions to the Department Library, July 1, 1898, to July 1, 1899.

Library Bulletin, October, 1898.

List of Publications relating to Forestry in Department Library.

Monthly lists of Publications, August, September, December, 1898, for sale by the Superintendent of Documents.

United States Civil Service Commission. Report, July, 1897, to June, 1898.

United States Geological Survey. Report, 1889 and 1890, Part 2, Irrigation. 1890 and 1891, Part 2, Irrigation. From Mrs. H. H. Chamberlin.

United States Commission on Education. Report. Parts 1 and 2. 1896 and 1897.

Field Columbian Museum. Report of the Director for 1897 and 1898.

Botanical Series. Part 5, Vol I.

Report Series Publication 29. Vol I., No. 4.

Lake Mohonk Conference on International Arbitration, 1899. Fifth Annual Report.

Michigan Agricultural Experimental Station. Bulletins, Nos. 162 to 174 inclusive.

Special Bulletins. No. 11, Frozen Trees. No. 12, Spraying Calendar.

Elementary Science Bulletins, Nos. 5 and 6.

Cornell University Agricultural Experimental Station. Bulletins, 152 to 172 inclusive.

Teachers on Nature Studies. Leaflets, Nos. 1 to 11 inclusive.

West Virginia Agricultural Experimental Station. Bulletins, Nos. 53 to 60 inclusive.

Massachusetts Agricultural College. Hatch Experimental Station. Bulletins, Nos. 54 to 61 inclusive.

Meteorological Observatory. Bulletins, Nos. 119 to 128 inclusive.

Massachusetts Board of Agriculture. Report, 1898. William R. Sessions, Secretary. Twenty copies for distribution.

Massachusetts Crop Reports. Bulletins, Nos. 1 to 6 inclusive. Series of 1899.

Massachusetts Board of Agriculture, Rooms 134, 135 and 136, State House, Boston. Catalogue of Library, January 1, 1899. Frederick H. Fowler, Librarian.

Massachusetts Horticultural Society. Transactions. Part 2, 1898.

Massachusetts Fruit Growers' Association. Report, 1899.

Parks Commission, Worcester. Report, November 30, 1898.

Worcester Society of Antiquity. Bulletins, Nos. 7, 8, 9, 10, 11.

Experimental Station Accuracy. Correspondence between Prof. W. P. Brooks and Andrew H. Ward.

Relative Merits of Soda and Potash.

Nature Study. Biology Series. C. F. Hodge, Clark University. Leaflet, No. 1, Common Toad. No. 2, Our Common Birds.

Flora of Lake Quinsigamond. Prof. George E. Stone. 1899. Massachusetts Agricultural College.

Microscopic Fungi. 1898. M. C. Cook.

Moulds, Mildews and Mushrooms. Prof. Lucien Marcus Underwood, Columbia College. 1899.

Wood and Garden. Illustrated. 1899. English. Gertrude Jekyll.

Revue Horticole. French. 1898.

Moths and Butterflies. Illustrated. S. F. Denton. Sections 5 and 6.

The Cultivator. New Series. 1845. Vol. 2. From American Antiquarian Society.

Plant Breeding. 1897. Prof. L. H. Bailey, Cornell University.

Forcing Book. 1897. Prof. L. H. Bailey, Cornell University.

Evolution of our Native Fruits. 1898. Prof. L. H. Bailey, Cornell University.

Principles of Agriculture. 1898. A text book for Schools and Rural Societies. Prof. L. H. Bailey, Cornell University.

Principles of Fruit Growing. 1898. Prof. L. H. Bailey, Cornell University.

Lessons with Plants. 1898. Prof. L. H. Bailey, Cornell University.

Garden Making. 1899. Prof. L. H. Bailey, Cornell University.

Pruning Book. 1899. Prof. L. H. Bailey, Cornell University.

Bush Fruits. 1898. Prof. Fred. W. Card, Rhode Island Agricultural School.

How to Build a Home. 1897. Francis C. Moore.

Botany. 1898. Julia MacNair Wright.

Flowers. How to grow. 1899. E. B. Rexford.

Among Rhode Island Wild Flowers. 1896. Prof. William Whitman Bailey, Brown University.

New England Wild Flowers. 1897. Prof. William Whitman Bailey, Brown University.

Landscape Gardening as applied to Home Decoration. 1899. Prof. S. T. Maynard, Massachusetts Agricultural College.

Horticulturist Rule Book. 1899. Prof. L. H. Bailey, Cornell University.

Greenhouse Management. 1898. Prof. L. R. Taft, Michigan Agricultural College.

The Soil. 1899. Prof. H. King, University of Winconsin.

Fertility of Land. 1899. Prof. I. P. Roberts, Cornell University.

The Nursery Book. 1897. Prof. L. H. Bailey, Cornell University.

Fertilizers. 1898. Prof. E. B. Voorhees, Director of the New Jersey Agricultural Experiment Station.

How to plan the Home Grounds. 1899. Samuel Parsons, Jr., Ex-Superintendent of New York Parks.

Spraying of Plants. 1897. Prof. E. G. Lodeman, late of Cornell University.

Inaugural Address. Rufus B. Dodge, Jr., Mayor of Worcester, January 3, 1899.
Worcester Directory.
American Florist.
American Gardening.
Country Gentleman.
Florist Exchange.
Gardening.
New England Homestead.
Massachusetts Ploughman.
Meehan's Monthly.
Rhodora.
Rural New Yorker.
State Board of Health Bulletin, Nashville, Tennessee.
Worcester Daily Spy.
Worcester Daily Telegram.

English:

Agricultural Gazette.
Garden.
Gardener's Chronicle.
Gardening Illustrated.

Respectfully submitted.

ADIN A. HIXON, *Librarian.*

Horticultural Hall.

November 1, 1899.

REPORT OF THE TREASURER.

NATHANIEL PAINE, Treasurer, in account with
WORCESTER COUNTY HORTICULTURAL SOCIETY.

DR.

1898.		
Nov. 1.	Cash balance as per last report,	$ 239.94
1899.		
Nov. 1.	Receipts to date:	
	From rent of stores,	6,399.96
	" rent of hall,	3,303.60
	" membership fees,	66.00
	" Chrysanthemum exhibition,	37.90
	" sale of tickets for annual banquet,	115.00
	" interest on deposits,	12.97
	Money borrowed,	14,700.00
	Interest from Savings Bank deposit,	55.00
	Total,	$24,930.37

CR.

1899.			
Nov. 1.	Payments to date:		
	City taxes and water bills,	$ 856.55	
	Premiums paid,	2,394.18	
	Paid judges of exhibits,	150.00	
	for gas,	652.41	
	A. A. Hixon, salary as secretary,	200.00	
	A. A. Hixon, as librarian, &c.,	1,000.66	
	treasurer,	150.00	
	janitor,	458.32	

Nov. 1.	Interest on Sav. Bank loan,	445.00	
	" " temporary "	204.51	
	For coal,	187.01	
	" repairs,	113.49	
	" printing,	104.13	
	" books and periodicals,	39.74	
	U. S. Collector for license,	75.00	
	Insurance,	21.00	
	Account of annual banquet,	203.55	
	Incidentals, including telephone, and sundry hall expenses,	463.38	
	Loans paid,	16,550.00	
	Deposited in Savings Bank,	55.00	
	Total,	$24,323.93	
1899, Nov. 1.	Cash balance,	606.44	
			$24,930.37

THE FRANCIS H. DEWEY FUND.

1898, Nov. 1.	Balance of fund,	$1,125.05	
1899, Nov.	Interest to date,	45.00	
			$1,170.05
	Paid for books,		10.00
1899, Nov. 1.	Present amount of fund, invested in Savings Bank,		$1,160.05

THE WILLIAM EAMES FUND.

1898, Nov. 1.	Amount of fund,	$500.00
1899, Nov. 1.	Interest to date,	10.00
	Present amount of fund, invested in Savings Bank,	$510.00

NATHL. PAINE, *Treas.*

November 1, 1899.

WORCESTER, 1899.

We the undersigned, Auditors of the Worcester County Horticultural Society, hereby certify that we have this day examined the account of the Treasurer, and find the same to be correct and properly vouched, and that the cash balance is accounted for.

HENRY L. PARKER.
FREDERIC H. CHAMBERLAIN.

ESSAYS.

A. D. 1900.

WORCESTER COUNTY
HORTICULTURAL SOCIETY.

4th January, A. D. 1900.

ADDRESS

BY

O. B. HADWEN, President.

Subject:—The Progress of Horticulture.

While nothing startling has happened during the past year there are several things worthy of notice.

The weather has been capricious, and the effect on crops of all kinds has been considerable; but in spite of the drouth the damage has not been heavy. In successful horticulture and gardening, first the soil should be made deep, and then rich by the addition of fertilizers and thorough cultivation.

Our members are daily improving both in skill of cultivation and selection for propagation and exhibition of flowers, fruits and vegetables.

Horticulture is an art or science contributing to the comfort of living, and both that art and agriculture tend to help the community in which they are highly developed.

The peach crop was nearly destroyed by the cold winter, while plums were hardy and plentiful. Pear culture is falling off in Worcester County. Of apples for family use and profit those sorts which originated in Worcester County are coming into special favor. That Worcester County is well adapted to apple culture is admitted.

At the beginning of a new year we still find that the color, size and general condition of our fruits change with the sea-

sons, and we know no means of controlling adequately the effects of the climatic conditions.

In flowers we see some new varieties in our exhibitions every year. With the perennials and annuals we have continuous bloom that furnish refreshing variety. The taste for shrubs is growing, and is bound to increase as people see well planted grounds and learn what can be done in the use of shrubs.

To one who can recall fifty years of Horticulture in Worcester County the progress appears great, and we turn towards the 20th century with the hope that this progress will be continued.

C. L. HARTSHORN.

In my early days farmers felt it was a waste of time and extravagance to pay any attention to adornment and beautifying the farm grounds or garden. Now even the poorest raise flowers. Since those early days the demand for vegetables like lettuce, cucumbers and radishes, has grown until it lasts the year around, and horticulturists and market gardeners have made a great advance in meeting the demands of the consumers.

EDWARD W. BREED, Clinton.

It is gratifying to think what the future of agriculture and horticulture will be in the United States since the acquirement of the islands, which adds new territories. This Society is to be congratulated upon having such members as George McWilliams of Whitinsville, Edward O. Orpet of South Lancaster, and others who are patiently working to introduce Hybrids in the Floral Kingdom: and these gentlemen are to be complimented upon their original and successful work.

ARTHUR J. MARBLE.

Horticulture has not advanced in some lines as much as some think it has.

There is no Pear, Strawberry, Blackberry, or Raspberry, that will compare with some of the older varieties. We want fruit that shall combine all the good qualities and be better than the old. We must set our standard high, and work to reach it. Apparently there has been a tendency in the cultivation of flowers to sacrifice delicacy of coloring and fragrance to size. We can see great gains in the progress of Horticulture in the appearance of our Parks and Public Grounds. There is no man in Worcester County who knows as much about Trees and Shrubs as our President, and I am glad to sit at his feet and learn.

SAMUEL B. PARSONS.

Perhaps I have been too practical—and while I could raise corn, potatoes and grass, that any man might be proud of, I may have neglected the more æsthetic part of Agriculture; I have discovered that there were other interesting and more profitable crops to grow, and henceforth would devote more time to experimental work.

E. W. LATHE, Charlton,

Described the beauties of Horticulture in the Annapolis Valley, Nova Scotia.

C. B. KNIGHT

Urged the women to become more interested in Horticulture.

Remarks by DAVID FISKE, Grafton, H. R. KINNEY and Secretary A. A. HIXON.

11th January, A. D. 1900.

ESSAY

BY

Rev. McGEE PRATT, Hartford, Conn.

Theme:—The Justification of the Flower Grower; or the reasons why people grow flowers, and the good they do generally.

My Friends and Mr. Chairman:—I am very glad to be here. The more I look around the world, the more I understand my own limitations and have new revelations of my ignorance of things that pertain to my own life. Now, I had no idea, when coming to Worcester, that I would meet a society so large and so influential as the one that honors me by asking me to address its meeting this afternoon; and I am sure of one thing, and that is, that if it were possible to trace the influence of this organization, we should find that it has extended well-nigh throughout the State; that the work done by this society through the long years that it has existed has altered, in some shape or form, for good, the thoughts and habits of hundreds and thousands of men and women. I say that because my thought this afternoon runs something along that line.

I have talked about technical floriculture so many times that I am almost tired of technicalities, and I thought just for a little while I would get away from the mere elements and methods of culture and see if it were not possible to find out some reasons that have made me, at times, crazy about flowers, and perhaps add some facts to the minds of those who listen to me for just a brief while.

I have been asked many and many a time in my life, "Mr. Pratt, what in the world is it that so fills your mind with flori-

culture?" They tell me—people of that sort—that they like to see a garden, but how a man can make it one of the habits of his life is something they do not understand. When a question of that kind is propounded to any thinking man, of course he wants to find an answer, if an answer is possible, and the thought I give you this afternoon is something of an answer to that question—Why I love flowers and the good they have done to me and others? I believe it is a good thing for us to be able to give a good reason for anything we do. So many of our actions are performed in a partially unconscious manner that we are not sure of the motives that actuate us, and only see the surface ones. Down underneath the surface there are found deep elements of truths that are hidden away by the overmesh altogether. I hope that when my talk this afternoon is finished, you will not brand me as a cheat, a fraud, and tell me that I have given you a lecture upon moral philosophy rather than upon floriculture; but there are elements of moral philosophy in my talk. I want to simply lay down this fundamental fact: the one thing that I know that distinguishes men from beasts, the one essential thing, is that man possesses certain moral qualities—qualities which you do not find in the lower orders of life. I express no opinion upon the mooted question as to the origin of man. But I say that there is a gulf that is impassable, that divides us from all other orders of life. You can find traces of intellectual qualities in some of the lower organizations, but you cannot find traces of moral qualities, those elements which enable us to distinguish right from wrong, and from that basis, I come to the subject which attracts us this afternoon—that of floriculture; and I want to say this, that in everything we do, whatever it may be, there are certain moral elements; whether we are eating or drinking, dancing or walking; whatever our occupation may be, there are in that occupation or in that recreation certain powers that are continually shaping and moulding our lives. We may be altogether insensible to the progress of the work; we may be unconscious of the processes altogether, but it is going on all the while; and in defence of those who love flowers, I make this strong assertion,

that the influence of all things that are pure, the influence of all things that are good and that are beautiful are continually acting upon their lives. They color our thinking in some strange way; they influence our conversation, and the very thought that our minds are occupied with the concern of things that are beautiful in themselves, works within us its constant miracle of improvement by which we are made better than we would have been without them. So, certain things I want to say this afternoon will hinge upon the thought I have given you in my brief introduction.

You know someone, I forget what poet it was, has said that "Man is never, but always to be, blessed." The idea of the poet I imagine to be this: that pleasure is something that seldom materializes. We can scarcely ever say of the existing, passing moments, that this is the very happiest one. The joys of life sometimes haunt us when we think of the past through which we have lived. They are worth having, but there are better ghosts than these,—the ghosts of the joys that are yet to come, of the pleasures that we shall have in the bye-and-bye, the good possessions that will be ours when the days and months and years have passed away; and the wise man and the wise woman does not think so much of the existing, fleeting moment as he or she thinks of the morrows that will come; and whatever measure of power we have, if we are wise, we shall use so that the morrow may be better than today as we go on.

Now, the fact is, I say that wise people are always making arrangements, so that tomorrow shall be better than today, and everything in life has some influence in shaping our thoughts and our activities, and I ask you whether there is anything in this world that can so cultivate the habit of forethought as the culture of flowers.

Every man and woman that is a true flower-lover must answer by thinking of the time that is coming; not so much about the occupation of the present as about something that must be done to make ready for the spring, summer or fall, that shall be here even in the bye-and-bye.

If you were to look through the different professions and

occupations of this world, I hardly imagine that you would find any body of men that have the habit of forethought developed so much as the professional florists. I have been acquainted with them for a good many years of my life and though they have a good many weaknesses,—as all the rest of the world have,—this virtue they possess in a large measure: they are making ready almost always in their thoughts for the time that is coming, and that is one of the best and noblest virtues that human nature can cultivate; not looking so much to the present time with whatever it offers to us, but that the future may be better; that the coming time may be grander and nobler than any we possess or have ever known.

You take, for instance, the ordinary amateur, and I suppose I am addressing more amateurs than professional florists, and I am glad of it,—just at the present time, there is very little that we can do. Nearly all our work has been accomplished; we are only waiting. When you have taken your bulbs and hidden them away in the earth and you know that when you have placed them in the loom of Nature, with a woof of frost and a warp of snow, she is weaving garments of scarlet and blue that shall make the earth radiant with beauty when the spring days shall come; and every time you look at the form of the beds that are hidden away under coverlets of snow, you think of the tulip and crocus and the joy-bells that will bye-and-bye ring out in the gladdening peal the music of the spring. You have made all these arrangements for a purpose. The work has been done and you are living in anticipation of the reward that shall come to you bye-and-bye. And so, as I say, the true flower-lovers have that virtue, the virtue of forethought, developed very largely. They simply cannot be avoided.

You know there are certain inexorable conditions in nature. We cannot escape from them, try as we may. One of them is that delays are not simply dangerous, but delays are fatal. No proof of that can be given stronger than an experience that I had a few days since. I went into a greenhouse under the management of one of the best gardeners I have ever known in my life and I found him dropping tears, which continued nearly

all the time I was with him. He had discovered that the early frost of the fall had killed almost all the new wood of his azalea plants. They had been the pride of his heart for years and they had been very beautiful indeed in their prime. He had left them out just one frosty night; had forgotten them or neglected them, because he thought it wouldn't freeze hard, and he had neglected to take them into the house, and a failure of bloom for the whole year was the penalty he paid for just that one act of forgetfulness.

We learn just one thing; that is to say, through the culture of flowers we get near to the sacred heart of Nature, and know that she will accept no excuses for our indolence, and that she exacts penalties which we cannot escape if we neglect to obey her laws and work in harmony with them. Do what you are bidden by this universal power, and Nature is kind to us with more than a mother's power, kind with a mother's kindness as she gives us back a hundred-fold for all things we do for her.

Can you tell me why it is, or if you have thought why it is, that people love flowers? Now, I like to find out the reason of things and satisfy myself as well as I am able, to discover that secret, and to do so I had to examine the elements of man's moral nature, and from a somewhat large acquaintance with men and women, I found that they were, everyone of them, so far as my acquaintance goes, prone to find fault. I never yet, in all my life, found anyone who was perfectly satisfied with everything. No matter how beautiful a thing may be, and there are a great many beautiful things in this world, after the first flush of pleasure passes away from the face and the first gleam of gladness fades from the eye, they begin to turn about the thing you gave them, no matter how fair it may be, to see if they cannot find some fault with it, some flaw, some blemish in it. Nearly everybody will do that; no matter what you give them, you will immediately see that after they have feasted their eyes upon the surface beauties, they then begin to look for imperfections. I do not understand why they should do it, because they, themselves, are all imperfect—imperfection is one of the conditions of human nature; yet, they, though not being perfect men and

women themselves, demand that the thing which satisfies them shall be perfect. I believe, however, the charm of life is found in these hopes of the future—dreams of the future that shall come to us when we realize a perfect existence.

Now, a flower is the nearest approach to perfection. One of the visible sources of good. Take a rose or a lily, or any highly-developed flower in its prime and examine it thoroughly, and you can scarcely find anything in it that will give you occasion for criticism. It is the nearest approach to the ideal thing of which we have any knowledge, and for that reason it makes its unconscious appeal to man and woman, speaking to the worst as well as to the best of them, as a prophecy that, bye-and-bye, all of their hopes will be realized in some good coming time.

You look at your nice rose. Take the most perfect specimen you can find, in its prime, and you will find that there is scarcely any flaw or blemish in it, and for that reason it makes its strong appeal to the souls of men.

Thomson, one of our English poets, sings to us of the pleasures of hope. I do not think that any body of people in the world know so much about the pleasures of hope, as does the true flower-lover. We are sustained and upborne by hope nearly all the time. You take hope away from our lives and there is very little left. Something came to me in thinking of this branch of my talk, that had never crossed my mind before, and when that thought was put down, one of the old memories exercised itself in my thinking, and that old hymn came to me:

> "Bright star of hope
> Come shed your beams on me
> And send a loving message
> From far across the sea,"

and I remembered that the emblem of hope many times was that of a star; and then, by quick transition, flower after flower passed athwart my imagination, and in almost every one of them, I recalled that you find a star imprinted somewhere or other, either in the petals of the flower or in the calyx. You look at the rose or the carnation, and there you will find the star in the calyx. You may go all over the floral world and you will find

that, in some shape or form, the star is present as a witness of the better things that are coming, and that, though the night be dark, yet there is light shining somewhere; and the beauty of it is that the light will grow stronger and stronger upon our lives if we look for its coming.

All flowers have their unconscious ministry—a blessed ministry; they give us our childhood back again under some very real conditions. We say that the child has the faculty of imagination in much stronger activity than at any other time in life. Now, I rather dissent from that statement as sweeping and general; yet there is some measure of truth in it. You give a child a picture-book and the imagination of the child at once invests everyone of those pictures with a large measure of reality. The drama imprinted on the page becomes a real scene of activity to the mind of the child, and the child lives in the thoughts that are presented by the picture-book. Now, the flower-lover has precisely that same privilege, and I suppose that in a little while most of us will feel its power. The daily mails will be bringing to us the catalogues, in a week or two, and if you have any of the passion for flowers that I have, you will sit around the fireside at night-time and examine the catalogues one after another, and will create, if you are wise, a mimic garden in which the beauties which are brought to your mind will become realities to everyone of you. Why, I think we are better in that respect than even children; the children have simply imagination, we have imagination and knowledge as well; and so our picture garden, built by the fireside in winter-time, becomes more real to us than anything that the child can know. Try it and then see how good it is to us. There are no weeds that trouble us, no blight that annoys, no insects that destroy; we have an ideal garden there. If your experience is like mine, then to you your picture garden will be better than the reality.

I have looked over some catalogues, especially John Lewis Childs', and I am quite sure the pictures are better than the flowers. I have tried them many and many a time, and I give a preference to the pictures nearly every time. There is hardly

a flower-garden that exists outside of the minds of different men that can equal them, none that I have ever seen, that can equal the pictures that are turned out by the printing-press of John Lewis Childs.

I suppose there are people who have had similar experiences.

The future of this world depends upon one thing, among others, an essential thing, and that is, How shall we make the future better than the past?

If you could trace, as I said at first, the influence of this society through the houses and home lives of the people around about this State, you will find that you have partially answered this question. You have beauty where there would have been but desolation and waste, were it not for the endeavors and activities of this society. That is the crucial question of life: How tomorrow can be made better than today; how the generation that will succeed us will be worthier, stronger, better and nobler than even those who are trying, with many a toil and many a tear, to make the world ready for their coming. Flowers help us to answer this question. I hardly know of any unconscious teacher who does that better than they. Take any flower, I hardly care which one you select—any one will do—I mean any one that has had years of culture, like the carnation, or the fine rose or the sweet pea; and it is a fact that if you look into it very closely and think about it (for the disclosure of truth depends altogether upon the measure of thought you give to it) you will discover that in that flower there is so much of man and so much of God. All the perfect flowers, if we listen to them, tell us so much of the exercise of Divine kindness and forethought, so much of human effort, so much of embodied intelligence; the best things in the floral world, without exception, convey that message to man.

You take a flower in a state of nature—a wild flower; it is very beautiful I know, some of them are beautiful indeed, but it has certain things in it, certain frailties, certain elements of imperfection, generally speaking, so that it lasts but a little while; frequently it will be immature, and yet there is one thing in that "natural flower" as we call it ordinarily, that

atones for the elements of imperfection, and that is that there are glorious possibilities in the flower. They tell us that the weed is an undeveloped flower. This is believed to be true, generally, but when the flower is given to us, in that flower, as we pick it by the wayside, there are certain appeals which it makes to our nature. It tells us that in it are possibilities of development and beauty which the heart of man has not as yet conceived, and it pleads that we give to it our thought, our care, our effort, our time, that we may open up out of the heart of the flower, the latent possibilities of excellence that are hidden away in its leaf. By that means only can we get the best out of anything we find in the world of nature around us. And for that reason, the very best advertisement that a man or woman can make of the quality of their virtues is to be found in a well-cultivated flower-garden. I believe no cemetery has ever had engraved upon its tombstones a testimony to the worth and excellence of man or woman so legible and beautiful as that which you will find in a well-ordered flower-garden surrounding the houses and homes of men and women. There is nothing better, because it shows that the person is living in harmony with the laws of progress that govern all the world of good with which we have anything to do. I hold that any person who distributes beauty with an open hand and scatters abroad, wherever he goes, the elements of artistic and æsthetic life, is a national benefactor. He is not only improving his own life, but he is doing good to all the people who come in contact with him, whenever their eyes rest for even a minute or two upon a garden as they drive by upon the road. I am quite sure of one thing, and that is, that there is scarcely any work that you can do (that does not bring you into immediate contact with men and women) half so good as that of keeping a well-ordered garden in front of your house.

Now, I am sure, ladies and gentlemen, and I am sure our moderator will agree with me, that we do not have life enough of made-beauty in this world, especially in America. We have plenty of natural beauty, but we need more of made-beauty. I have travelled in many lands, and I think for grandeur, for

picturesqueness and attractiveness, in fact, for all elements of natural beauty, we can find the best and some of the worst upon this continent; yet, to go through all the States I have visited, is to the floriculturist a disappointment in a very large measure. We have not the cultivated and created, the made beauty, that they have in many of the old lands, and with all our advantages of wealth and leisure it is a disgrace to us. I hope I may live long enough to take another trip or two across the Atlantic, that my eyes may rest once more on the English landscape in its unusually high degree of beauty, in the month of May or June. Let me tell you people, who may cross the Atlantic to visit the old land, if you want to see it in all its splendors you must not take the tourists' months of July and August. You must go there in May or June, and you will find a scene of ravishing beauty, which I will not attempt to describe to you; but every landscape is a perfect picture, and where the fields are divided by hedge-rows it looks as though a framework of silver was all around a scene of green. The villages, indeed, are rapture itself to wander through, and upon some light spring evening, if you stroll about, you will see that every cottage garden is a perfect bouquet; every window is burdened with bloom, the people all trying to make the general effect as perfect as possible. And this is the ideal I have in my mind, sir, for an American village; they call them "gardens" over there. I hardly understood, it is a long time since I came to this country, and I hardly understood what a door-yard meant—I do now; I believe that people call them "door-yards" because they are ashamed to call them *gardens*. This is one of the exhibitions of unconscious modesty, such as you seldom find on this continent. I had to go through a door-yard a short time ago, and I don't like to tell what I saw. I don't like to describe the things I found there, but there was the rubbish of the house—the youngest of it was twenty-five years' old—that portion of it was a pair of boots which grandfather used to wear, and grandfather had been dead twenty-five years; and then there were two of those circular arrangements that ladies used to wear about twenty-five years ago, and broken crockery-ware and things of

that kind, just put in there under one corner of the fence where it would harbor and give protection to insects and other evil and noxious things. It would have been a disgrace, that door-yard, even to the hut of a savage. And this is not an isolated instance, is not an isolated condition of things.

Many and many a counterpart of that door-yard have I seen while I have journeyed over this continent, but I think this Horticultural Society will, some day, make such barbarism, at least, impossible in this land. For that reason, every village improvement society that asks me to come and give them a talk finds a ready and ever-willing response from me. I believe they are doing a great deal of good by helping to make New England cities creditable to the people who live in them. Why, I have the transformation of a village in my mind, wrought out by means of one of the village improvement societies. There were fences that separated each house from every other one throughout the village (and wherever you find fences of that kind, you will find with it collections of rubbish or stone, or other things thrown all about—anywhere just to put them out of people's way), and when the Village Improvement Society went to work and persuaded people to take the fences down and make their lawns level and then keep them green, and to make flower-beds, they were like jewels shining upon the breasts of the houses as they stood there fronting the world.

Altogether, there has been a great change wrought; not merely in the houses themselves, but throughout all the immediate country-side. Just as soon as a person has a well-kept garden, other things must follow. The sidewalks must be well ordered, roads must be well kept up, and, whether you know it or not, there is a demand for harmony, as one of the essential conditions of the comfortable home. I believe it is the echo of the rhythm of harmony that runs all through the universe. God is sounding "Order!" into the souls of men. If you will listen you will hear His voice.

I wish that in every village in this and all other States, organizations of this kind were in existence, having officers of the character of those I have met here today with so much pleasure

to myself—active, energetic men and women, who will carry the principles of the society into every home throughout their jurisdiction.

I have learned some wonderful things in my garden. I do not know whether you know it, friends, but I am a clergyman, and naturally enough I studied theology years ago; but I believe that some of the best theology I ever acquired I picked up in my flower-garden. I don't want to preach a sermon to you this afternoon, but I am just talking and saying things that came into my nature, but we are all concerned in a measure about what Darwin called the "origin of the species"; just that part of it I will touch upon, because I have learned something worth learning from my flowers. I will show and illustrate what I mean with that very hackneyed part of it, or rather the illustration used by Darwin of the orchid and the moth.

You know that he tells us of one of the orchids with a very long tube, saying that in the past the tube was very short and, therefore, accessible to the moths; the orchid began to lengthen itself at the tube; then the moths had to lengthen their antennæ, so they could extract the honey, and it became a race between the insect and the flower—the flower trying to make a longer tube and the moth trying to make longer antennæ, so it should not be starved when it wanted a meal. That is the explanation that Darwin gave when he was asked how an orchid obtained a tube so long. And so, the thought came into my mind that if this could be true, then the processes of nature were the most absurd conceivable; I do not believe Nature is half so foolish as that, and in all I can find out about her methods, she tries to simplify things, not to make them more complicated; to make life easier, not more difficult,—instead of lengthening the tube of the orchid she would have shortened it so as to have secured more general strength.

In my garden, I find that it is a fact, and in my studies of floriculture I learn that we are confined within certain distinct limits and we cannot go beyond them. We cannot make a genus, no matter how much we try. We can develop different species in one family, but when we come to that defined line

which marks off one family of plants from another, we come to a gulf that seems to be impassable—beyond it we cannot go.

I honor Darwin for the work he did and also Grant Allen who recently passed away, and I like to read their books, though their ideas seem to me peculiar. They endow a few of the flowers with a certain measure of intelligence and they say that the white flower was inconspicuous and wanted to attract the notice of the passing insect at night and so it developed a fragrance, that when the moths flew past in the darkness they would know where to find it, attracted by the sense of smell, and that all the changes and alteration are wrought out by the will of the flower. I own I do not understand it. Even men, endowed with intelligence, men having great resources of intelligence at their command—they cannot alter their stature one inch, try how they will; they cannot change the limits of their own situation, although they have nearly all the power of the world at the service of their hands. And so, from my flowers I have learned this: there are certain things we can do in the development of beauty, in the unfolding of the possibilities of a flower, in giving the right to exist to the various charms which the flowers possess and keep hidden in the state of nature; but beyond that we cannot go, for there is no creative skill in man; there is no faculty by which he can call anything into being. That is held in the might of God.

As I have walked through my garden, I have thought in my own mind that the hand which painted the rainbow and hung the starry lamps in the black dome of night, gave to the rose its splendor and the lily its brightness, that each might bear witness to the world of His mercy and power.

Now, we get some wonderful visions of the glorious possibilities of future change in the flower-garden, better perhaps than we can find them anywhere else. Mr. Farquhar told me a little while ago that if I wanted some good pansy seed I could have some that he paid $70.00 an ounce for—Bugnot's of Paris—not fertilized seed nor of green-house growth; and my thought went back to the original pansy.

I suppose you all know how it came into being. It is one of

the most modern of all our flowers. At the close of the last century, a daughter of the Earl of Tankerville, went out into the woods, where she picked the roots of several varieties of violets and brought them into her father's garden; he gave her a piece of ground and she planted them. She saved the seed of three or four plants and in the spring she sowed them, carefully tending them, and when they blossomed, she showed the flowers to her father and the people around. Soon there was a marked improvement upon the ordinary or any of the ordinary types of the viola tricolor. And so they began. Her father began growing these violet seeds and plants that had shown so much promise, and the result is the beautiful pansy we have today.

It is precisely the same with the rose. I believe in every land in this world, the rose grows wild; at any rate, I have never been in any part of the world that has not seen some member of that family; but you know in the wild state there are always many imperfections in the rose, although some types of the wild rose are very beautiful. But the petals are very thin and fragile; frequently the flowers are single and the foliage is weak. I think you will remember that through centuries of culture, the good qualities that were in the heart of the flower have been finding their way to perfection. Sometimes a stem has grown stronger; sometimes the root has developed more activity; sometimes the foliage has become richer, and so, much better able to minister to the needs of the plant; sometimes the petals have had richer colors given them, or sweeter fragrance, or have multiplied in number until, at this present time, the rose, through the culture of man, stands queen—crowned queen of all floral loveliness of earth.

I will ask you one question. Which do you think is the natural flower—the wild rose or any of the American Beauties,—which do you think is the natural rose? The rose which fulfills the purpose of its being, that is what a rose was intended to be; or, is it the wild rose in its natural, uncultivated state? Is the wild violet flushing your hillsides the natural flower, or is the pansy the perfect flower? My answer is this: that the flower which reveals to the eyes of man its utmost capabilities and

possibilities is the only one that is really and truly natural; the others are unnatural, because they have not reached the height of their capability and power.

There are some men in the world so evil, debauched and degraded, that they are a disgrace to manhood; there are others who are wise and kind and tender and good. There are women who cause us to blush when we look at them; there are others the very touch of whose hands makes us better and purer, and I ask you which is the natural man, the natural woman? Those who flaunt their sin and shame in the eyes of the world, or those who glorify humanity by the exhibition of all the glorious qualities of human life, the man and woman as God meant them to be? I think the best are the most natural! They have the God-thought more clearly revealed in their lives and I think there is nothing in the world that gives us so much encouragement in working for the lost and degraded as the thought that we may improve the worst of them even as we have improved the rose, the pansy, and every other flower to which we have given thought and time and skill. We become encouraged to work for humanity by seeing how much we can do for almost every flower that grows by the wayside.

I do not know, sir, how long I ought to talk, whether you are getting very tired or not, but there are three or four other things I should like to say, so perhaps I had better pass over some of the things I had prepared.

Above all things that are the curse of this age, I think pessimism is about the worst. There are some people who always believe the worst of everything and everybody. When I look very closely into the details of the lives of such people, I find that they have, generally speaking, tried to seize hold of their own share of life's good things and somebody else's as well, and they have missed it; so they say, "Life is not worth living." They become pessimists. I say flowers teach us the other philosophy, the beautiful optimism of life, and I affirm here, positively and with all conviction and with all the force of innate soundness of mind that *life is worth living*, if only to see the roses bloom in June, and worth living the whole of the other

eleven months with some measure of trouble so that we may have that glorious vision of what the world of nature is capable of when it tries to do its best.

I have gone, especially after a Sunday's hard work, into my garden, when the people insisted that the sermons were not quite as successful as they ought to be (and I thoroughly agreed with them). I have gone out into my garden and learned some lessons of patience and quiet fortitude, and I have been able sometimes to say to those who hold the cup from which you would drink, "Your *yea* and your *nay* are immutably heedless of the outcry of the wise that life is worth living and here would we stay with a houseful of books and a garden of flowers."

I want to tell you that rivalry is a good thing—well, so it is. (I had better not go into that.) I don't mean that a man shall take all the prizes in a flower show without he earns them; but I have been judge a good many times in my life when a man showed poor flowers and swore at the judges because he could not get the prizes. I think that man makes a great mistake; there is a mistake somewhere in the premises. (But I had better pass that over.)

Flowers tell us that the best way to dispose of our affections in this world is to widely distribute them. Husbands and wives may not believe in that philosophy and it may not appeal to us, but so far as the flower-garden is concerned, I am sure it is the best system to live by. Roses in a garden are a great deal better than a garden of roses. We want a foil to every flower, no matter how beautiful it may be in itself. We want variety, whether in a flower-garden or in life, and though you may be wedded to one flower, as the dahlia, or the sweet pea, or the rose, whatever it may be, you had better have as many supplementary friends as possible, so you may make the blossoms of life last the year round in any garden you like to plant. Do not centre all your love upon any one thing, no matter how beautiful it may be.

Somebody asked me in Springfield if I could give any special directions so they could be sure and succeed in making a garden. I said, yes, I could. The great Master, whom we all

honor, gives a special law of life that we call the "Golden Rule," so that in our moral conduct we may be protected from evil. Now, I have a golden rule for the garden, formulated for the Springfield people, and it is as good down here in Worcester as it was in Springfield. If a thing is worth doing at all it is worth doing well. There are some flowers in some gardens that are a disgrace to the people who planted them, and never cared for them after they planted them.

I believe every person who wants a garden should have a picture of that garden framed in his soul, and then should study to know the nature of the flowers and try to make that picture come true. Then we should have a garden worth living in and worth looking at.

The wise man said, "Let your moderation be known to all men." I have seen flowers in mobs; I have met flower gluttons; and I heard once—I have forgotten whether it was a negro or an Irishman, but either one or the other will serve the purpose of the story,—who when asked how much ground he had, said "Half an acre"; and describing what he had in it, he said he had a quarter of an acre in potatoes and a quarter of an acre in corn and a quarter of an acre in parsnips and a quarter of an acre of something else. Some one asked him how he managed to plant a quarter of an acre of potatoes and a quarter of an acre of corn and a quarter of an acre of parsnips and a quarter of an acre of something else when he had only half an acre of ground, and he answered and said that he set the ground up edgewise and planted it on both sides. I have seen people who would almost serve their grounds and gardens in the same way. I believe that flowers, like men and women, should have plenty of elbow room and an opportunity to show all the good and beauty and power there is in them. The overcrowded garden is almost always a mistake. A garden that gives to everything you plant in it an opportunity to develop, as well as to a wise arrangement of the things that you plant—this is the model garden, when things are looked after as well as you are able.

I will sit down, although I could keep on talking for another hour on that subject, but if I were to sit down just like this,

you would say, perhaps, I have ascribed all the virtues to the flowers and none of the vices, while flowers have some weaknesses—I won't say vices. They are very human.

I had, some years ago, a catalogue from John Lewis Childs. There were a number of bulbs advertised in the catalogue that were strange to me, although I had been associated with floriculture for a great many years. I sent for some of these new, strange sorts and planted them very carefully according to directions, and nursed them well for months, but every time I looked at them, I saw nothing but weeds; never a flower gladdened my eyes during that winter-time. I had been out into the world and found a great many people who have brought to my mind, incidentally, that box of strange bulbs; I have seen young men who dressed well and drove about in a buggy all day long, while father looked after the store or walked after the plow, and I said to myself "Nothing but leaves"; I have known of nice young ladies who played and sang like angels while mother was in the kitchen washing and scrubbing and doing the work, and then I said "Nothing but leaves"; but worse than that, I have known men in prayer meetings who have given their "testimony" (as they call it) and prayed loud and long and all the time I knew that at home they cursed and growled, and of those men I have almost said as I listened to their prayers, "Nothing but leaves." I believe that flowers of this sort are sent to us as a warning, to teach us that we should always make our performances just as good as our promises; that we should give no hope to the world of anything we did not mean to fulfil. There should be something in the nature of harmonious growth through all our lives that the useful and beauteous things should grow up side by side in the garden of the soul; and that life is a perfect life which tries to harmonize the idealities and artistic elements of life into one perfect and harmonious whole.

Mr. Hadwen: It is not always that the members of this society have the pleasure of being seated for an hour or more in a flower-garden in the month of January, as we have here this afternoon.

I have been exceedingly interested in the remarks of our friend. I notice that he is a philosopher and I would like to ask him one or two questions. One is: When you dig a hole and plant a rose and put the food all on one side of the roots and they all go for that food, is it intelligence, or is it instinct, or what is it on the part of the roots?

Rev. Mr. Pratt: Flower in the greenwood wild, I pluck you out of the crannies of the rocks and hold you in my hand—roots and all—all in all—little flower, if I could understand what you are, root and all, I should know what God is and what man is.

No sir, I can't tell you! I suppose that there are certain affinities which certain things have for each other, which attract them, the one to the other.

I hold in my hand a glass; solid, you tell me: and yet I know it is not; I know it is made up of small atoms—atoms so small that one could not see them without the aid of a very powerful microscope. It is apparently solid, because it is held together by the attraction that one atom has for the other. Whatever that may be, I do not know, no one does; but take away that attractive force which dwells in the atom, and that seemingly solid glass would crumble into a little heap of dust in my hand. That law runs through all nature. Clouds are attracted to each other, and all things that have any sympathy or any "affinity" (as we call it in scientific parlance), things having affinity for each other are drawn together; and so the world is held together by virtue of that very law,—the law that "like is attracted to like." There is something that exists in the roots of the roses, and something in the composition of the fertilizer (whatever it may be) that are like each other; and by virtue of that law of attraction which is felt in every particle of nature, which is felt in every atom of the universe, one is drawn to the other. What that attraction is, there 's no man wise enough to tell us. I wish there were.

[Remarks by members followed.]

18th January, A. D. 1900.

ESSAY

BY

CORA C. JONES, Roxbury.

Theme:—Arbor Day.

History of the Day. Its importance from an Economic and Educational standpoint, and its possibilities for Women's Clubs.

It is pleasant to have for a subject, one that in its name suggests comfort and rest—a shelter for the weary—a grateful shade to the traveller. Arbor Day is the only holiday that exists for the future; all others eulogize the past, keep alive some memory mingled with sorrow. Arbor Day speaks only of joy, progress, hope, the most unselfish of days, providing for the welfare of the future, adding to the joy of our descendants, rather than glorifying the deeds of our ancestors.

The first settlers found on the shores of their new home unlimited forests, reaching, as far as they knew, from shore to shore. The necessity of clearings for their farms, led them to look upon the forests as their natural enemy, to be disposed of by axe and saw; so for years, forest destruction seemed in the line of progress. The woodman's axe was the symbol of civilization. What a change of scene met the eyes of those who, in later years, emerged from the cool protecting woods upon the vast, treeless, sunburned plains of the west.

Here, under the fierce rays of the sun, in the blinding sand storms, in the death dealing winds of winter, they learned the value of trees; realized as never before their beauty, their protection, their life-saving, life-giving properties. So, out of man's necessities, grew the sentiment for which Arbor Day was born. Early settlers destroyed the forests that the fields might bloom;

we must protect the forests that the fields may not cease to bloom.

J. Sterling Morton of Nebraska, Secretary of Agriculture, who, for eighteen years, had planted trees about his home, Arbor Lodge, making it a cool, green, sheltered spot on a burning, wind-swept plain, in 1872 conceived the idea of setting apart a day for tree planting. Before that time, rows of trees as wind-breaks about the ranch buildings, with here and there a little foliage along the river banks, was all that gave variety to that great rolling prairie.

Mr. Morton on January 4th, 1872, in the city of Lincoln, Neb., at the State Board of Agriculture, introduced a resolution declaring that a day in April be set apart for tree planting, to be named Arbor Day, its object to avert treelessness, to improve the climatic conditions—for the sanitation and embellishment of home environments—for the love of the beautiful and useful, combined in the music and majesty of a tree, as fancy and truth unite in an epic poem.

One hundred dollars was offered to any Nebraska county planting the greatest number of trees, and a farm library, costing twenty-five dollars, to any person properly planting the greatest number of trees. Thus Arbor Day originated, and the cry of "plant trees" resounded throughout the State.

On March 31st, 1874, Gov. Robert W. Furnas issued the first proclamation for the observation of the new holiday. Some years later the legislature made the 22nd of April, Sec. Morton's birthday, a legal holiday, and christened it Arbor Day. So quickly did it appeal to the intelligent, beauty-loving people of the State, that upon its first anniversary, one million trees were planted, and within sixteen years, three hundred and fifty-five million forest, fruit and shade trees, one firm alone having a contract for planting three and a half million forest trees.

Nebraska is known as the tree planting State. So readily do trees grow in its fertile soil that thousands are pulled up by the roots from the banks of the Missouri, set in rows in ploughed furrows, the earth turned back upon their roots, trodden down

by the planter's foot, and left to grow without further care. Naturally the greatest number of trees are planted in treeless States, but the tree spirit is as strong among our well wooded hills, and as deep a love may be aroused by the planting of a single tree.

Already forty-two States observe Arbor Day, either as a legal holiday, or as a day set apart by their governors. The States not officially observing Arbor Day are Utah, Wyoming and Delaware. Arbor Day has entered Canada and Mexico, and crossed the seas to Great Britain and India.

Do you realize that railroads, manufactories and forest fires consume in the United States an average of 25,000 acres growth every twenty-four hours? How many acres are planted every twenty-four hours? How long will it be before the primeval woodlands will be completely denuded?

With this enormous consumption, the need of tree planting becomes greater, and the importance of Arbor Day increases. As more than twice as much wood is consumed as can be grown on our forest area, Arbor Day cannot hope to repair the loss, but will set in motion those ideas, that in time, will develop systematic forest management, such as is enjoyed by European nations, and forest guardians to enforce protective laws will reduce our loss to a minimum.

Next in importance to Arbor Day being made a national holiday, comes its celebration in the schools, for as much as we may hope to influence the present generation toward tree preservation, it is among the children that the greatest work must be done. Only by arousing a tree planting sentiment among them, can we hope for forests in the future. Our States do not own great forest areas as in Europe, even private estates seldom pass from generation to generation in one family, so that we must depend upon public sentiment for our tree preservation—upon individual effort—therefore we cannot place responsibility upon the Government—it is the people to whom we must look, and the people must be taught through the public schools.

Let the young be taught that they herald an era of forest

planters, not of forest destroyers, for "Enlightened public sentiment is better than a national police."

The day was first celebrated in schools, in America, through the influence of the Forestry Association, which met in Cincinnati in 1882. The city put on its holiday attire, public schools were dismissed that teachers and pupils might take part in the ceremonies.

Fifty thousand people assembled in the parks to attend the tree planting. Upon the firing of a gun, memorial groves, such as President Grove, Pioneer's Grove, Battle, Citizens', Authors' Groves, were planted by loving hands, and dedicated with appropriate ceremonies. In each grove tablets with inscriptions were set. The celebration aroused great enthusiasm. No sight more touching or beautiful has been seen in Cincinnati, and a crown of success was awarded the Forestry Association This Cincinnati planting of memorial trees and groves has been followed by other States and recommended in the schools of Great Britain. When we consider that the age of an oak may be 2,000 years, of an elm 500, of a maple 800, what more enduring or beneficent monument can be raised to the dead! New Haven with its famous elms, holds in grateful remembrance Hon. James Hillhouse, by whose hands they were planted.

Today the beautiful ash trees planted by Washington at Mt. Vernon are not the least of his memorials. What monument of marble moves the heart of every true American, as does the Washington Elm in Cambridge, and as did our beloved Boston Elm, upon whose fall the church bells tolled!

The interest in the grove, planted by Hamilton in New York, grows deeper as time goes on, and by its living presence, seems to bring us into closer touch with the hands that tended it in youth.

In Iowa a law provided that each school shall plant twelve trees upon its unshaded grounds. In towns where children can plant trees the day is celebrated out of doors, by instructing the scholars how to plant trees previously selected, and for which holes have been carefully prepared, poems are read and songs sung relating to their beauty and growth, thereby investing them with an interest and affection that always follows a

knowledge of their life, habits and value. The child who has thrown a handful of earth about the roots of a tree, will ever after watch its growth, and through the love of one will come interest in the woodlands.

Tree planting is educational in the largest sense, the handling and planting encourages observation, and cultivates a love of all natural objects, and above all teaches unselfishness in seeking to enrich the future.

Speaking of investing a tree with interest, recalls a sugar maple, from whose rugged trunk the life blood flowed freely in the spring-time. It grew on a mountain roadside, and was a noble specimen with wide spreading branches. Upon it was a board bearing this verse:

"Most sacred tree that ever grew,
True type of Him whom sinners slew,
From thy pierced side thou dost bedew
With sweetness, those who thrust thee through.
Now a new name give I to thee,
Be called henceforth the Christus tree."

Just below it, over a spring, was this inscription:

"Oh! Traveler stay thy weary feet,
Take from this fountain, pure and sweet,
A cup of water in His name.
It flows for rich and poor the same.
Then go thy way, remembering still
The wayside spring beneath the hill."

Old and young in the neighborhood had learned the verses, and it occurred to me that appropriate inscriptions hung on favorite trees in the school-yard, or upon especially noble trees in our parks, would idealize and sanctify them.

What are the possibilities for Women's Clubs? Arbor Day history is yet to be written. What greater service can Women's Clubs do than to first inform themselves on the subject of forestry and seek to impress the present generation with the imperative need of tree planting and tree preservation. It would be a most worthy ambition to infuse into our school system, reaching as it does the heart and life of every child, the purpose and the will to exert every effort to change this destructive process to one of increase, in every State and territory, and teach those habits of

thought and feeling in regard to the benefits and uses of tree planting, to deter them from the destruction of our lawns and parks.

We can encourage the organization of forestry associations in every city, town, and school district. As part of our educational program, we can plan attractive Arbor Day exercises, and interest the teachers in our vicinity to use them. Suggestions for such exercises, with appropriate poems and songs, can be found in libraries under the title of Arbor Day, and Hon. B. G. Northrup of Connecticut, Hon. B. L. Butcher of West Virginia, and Dr. Peaslee of Cincinnati, are authorities on planting in school-yards.

The State Superintendent of Wisconsin issues a yearly Arbor Day book of fifty pages, full of original suggestions and choice selections appropriate for Arbor Day celebrations. In what more practical way can our Forestry Associations and Horticultural Societies encourage the love of tree culture, than by inspiring Arbor Day celebrations in our schools?

On Arbor Day the children may apply the knowledge gained from nature study, out-of-door schools, field-work, whatever name you choose to give that broadening educational impulse that brings the child in touch with the out-door world, rather than with books. It is permeating our schools today. Let us hope that in the near future the out-of-door school will be incorporated in our Public School system.

Every graduating class should hear a few practical lectures on forestry. Use less and waste less, should be taught in the primary schools, for as the Germans say, "What you would have appear in the national life, you must introduce in the Public Schools." Let the boys be called Forestry Cadets, and the magic of the name will work wonders as it has in the "Children's Street Cleaning Brigades." Lessons in the care of camp fires will decrease the horrors of forest fires. Plant trees in our door-yards, and our street will soon be bordered. Lead a few horses away from trees being gnawed to their death, and wire guards will follow.

I believe, that the easiest way to solve great problems is to

begin with individual effort. Try, however simply, to right the wrong, and growth will follow. If such a man as Hon. B. G. Northrup can change the aspect of some parts of Connecticut by his well planned efforts, how much more can 160,000 club women do in their respective States? Twenty-five per cent. of our States should be covered by forests. How many of us know how much of our own State is covered. If our Washington Elm during every fair day in the growing season gives out $7\frac{3}{4}$ tons of moisture to the air, let us not be discouraged if we cannot plant a forest, plant one tree.

France has planted, and is planting, all of her 19,000 miles of public roads with wayside trees. Our City of Rochester has freed its trees from tent caterpillars by aid of the children; the sum spent was small, the public sentiment aroused great. Have we no caterpillars in our town? It is a marvel that in any city where a Forestry Association, Horticultural Society, or service club thrives, that they do not first work to rescue the trees from destruction and death. The cost is so small; the return in health, comfort and beauty, beyond compare. Why do we, who love nature, spend our time and strength on work that can wait, while our trees, which money cannot buy, and only generations of time can replace, slowly succumb to the ravages of horses and electric wires.

The fact that this is true, is my excuse for giving before this Society the story in detail of how a few women sought to remedy the evil.

To those who do not realize that from Arbor Day celebrations Village Improvement Societies have arisen, as did Arbor Day itself from the efforts of one man, to the Club Women of the city to whom practical tree planting seems a difficult undertaking, this story of a postal card, from its small beginning to its happy ending, may serve as encouragement.

In one of our large cities a woman's club was formed in the spirit of helpfulness and work. The question arose as to what practical work should be done, and the members were asked to write on a postal the subject which they would like to have the club study. Among the many suggestions was one, "The pre-

servation of our city trees." This, with others, was selected for the winter's work, and a tree committee formed.

The story of that tree committee would be a fit subject for a book. Full of hope and enthusiasm they studied the condition of the street trees, found them in such a state of decline and decay, so horse-gnawed and wire-burned, with no public funds reserved for their protection that the city stood next to the foot of the official list for wayside trees.

Here indeed was discouraging work for an untried club. They planned to ask the city for an appropriation. They began by writing for the papers, to arouse public sentiment, to make people notice the trees. They talked long and earnestly with the Superintendent of Public Grounds, to find a lack of funds the chief cause of neglect. At last, armed with facts and figures, knowing full well the necessity of reclaiming the trees, if the city was ever to enjoy shade, health and beauty, they sought the mayor. No one but that struggling committee knows how many times they found the doors closed by press of business, how many appointments left unfulfilled, by unforeseen absence.

Of the mayor's approval they were assured. Many times by arguments and entreaties they seemed to have convinced the Board and Council, only to be told that while the object was praiseworthy, the city debt was too great to allow making new appropriations.

This committee, unused to political methods and work in public affairs, learned through bitter experience, how difficult was the road to success, when one had for their object public welfare only. In that period of discouragement they began individual work on a small scale. The Superintendent of Public Grounds gave them young trees, and the club induced property owners to plant them, and so two hundred trees were set out along the streets.

Again they sought the city officials and pleaded their cause, arguing the financial value of trees as seen in the sale of land bearing shade trees in preference to treeless lots; in the greatly lessened cost of watering shaded streets; it is safe to estimate the cost as one-third less; in the attractiveness to summer visitors, and above all to their health-giving properties.

The committee's desire was to encircle the city trees with strong wire netting six feet in height to prevent gnawing by horses, as they considered the damage done by horses greater than by overhead wires or underground pipes.

Many times during the three years of working and waiting they had cause to remember the psalm that reads, "Hope deferred maketh the heart sick, but when the desire cometh it is as a tree of life," when a letter from the mayor announced that five thousand dollars had been granted as an initial appropriation for the protection of the city trees.

The work of guarding by wire is begun, and the club has every reason to expect that every street tree will, in time, be healed of its wounds, guarded by wire, cleaned, trimmed and restored to health and beauty; and this is a service work that the Roxburghe Club of Boston will have done for its native city.

In response to the public sentiment aroused in Boston on the subject of tree planting and tree preservation, Mr. Doogue, Superintendent of Public Grounds, has generously offered one thousand trees to those who will plant them along the highways, as many as possible to be planted during Arbor Day week.

This is practical encouragement for Arbor Day celebrations of the kind we need; an example, it is to be hoped, that will be followed by City Foresters and Tree Wardens throughout the State. Tree lovers will watch with interest the progress made by our newly elected Tree Wardens, toward beauty in our towns. May they wisely sow seeds for the future harvest by encouraging tree planting among the towns' children.

Let us then inform ourselves on forestry, invite lecturers to instruct us in practical tree planting, study our local conditions, induce street surveyors to spare wayside trees and shrubbery, call attention through the press to the destruction by wires, pipes, insects and horses, ask builders to box trees during building, and if we can plant but one tree, plant it on a hot dusty highway or in a school-yard. Let us add a new chapter to Arbor Day history on the last Saturday of next April, and let our title be "PLANT TREES."

READING BY MISS ARLINE HALL.

FARMER JOHN'S DREAM.

Farmer John was a curious man—
He didn't belong to the Grange.
I am sure you will all unite with me
In thinking *this* very strange.
A bigoted, crabbed, stern, old chap,
His life was hard and plain;
And beauty of field, or wood, or sky,
Appealed to his heart in vain.
His wife was a woman deft and neat,
With the ghost of a vanished grace
In the shining waves of her soft brown hair,
In the lines of her wasted face.
Early and late she had toiled with him,
Smothering many a sigh
As she saw the dream of a beautiful home
Slip steadily, surely by.
There were clothes to wash, and floors to scrub,
And all the butter to make;
And Farmer John was a hearty man—
She must cook for his stomach's sake.
There was no room for a flower bed.
Pictures and books were "all bosh";
He had a love for the raising of pigs,
And knew a good turnip or squash.
And Farmer John was sure in his mind
That if you differed with him
You were the biggest, dullest of fools,
Or yours was a woman's whim.
A fair faced girl and a sturdy son
Were drilled to their father's mind,
While the old red house stood bleak and bare,
Unshaded by tree or blind.
"I can't spare the time for fol-de-rols—
The house don't leak, and is light.
Good enough for *me*," said Farmer John,
And he screwed up his lips so tight—
"Shade trees, and shrubbery, *Fiddle-sticks!*
Want ter celebrate Arbor Day?
You'll *hev* ter want; thar's the medder lot
Ter be ploughed—No time for play!"
But he saw tears in his good wife's eyes,
And after the chores were done,
He fell to thinking before the fire—
Queer thoughts for old Farmer John!

He fell asleep in his straight-backed chair,
And dreamed a remarkable dream.
He seemed to be in the old wood lot,
By the side of the babbling stream.
Oaks, and maples, and willows, and pines
Grew where they had not grown,
And talked so strangely, that Farmer John
Stood like a pillar of stone.
They spoke of all things tender and good;
Of the Maker's infinite power;
Of forest aisles, and shady pools,
And the fragrance of budding flower;
Of pleasant homes, and of childish feet
That light through the green wood strayed;
Of weary souls who had paused to rest
In the gloom of their grateful shade.
And at last they spoke of Farmer John.
"He is killing his wife," they said,
"With his barren facts. Her nature cries
For more than clothing and bread.
She starves her soul for his selfish creed;
His boy is sullen and cold;
His daughter's life is darkened, and cramped
To fit in her father's mold.
There's not one fair or beautiful thing
About the dreary old home.
Some day both daughter and son will leave—
In happier scenes to roam.
He loved his wife when he brought her there,
A graceful, blue-eyed thing:
And he was a likely youth. They looked
At life through the wedding ring.
But the greed of gold has made him hard;
And the end of it all will be,
His wife, she will slumber soon and well
'Neath the spreading churchyard tree."
Then Farmer John woke out of his dream,
With a thrill of remorseful pain;
And the faded face of his weary wife
Seemed fair and youthful again.
A sense of shame, and a tender thought
Of the past stirred in his heart,
And throbbed there, rending the sordid crust
Of the long, long years apart.
He bent to kiss her on brow and cheek;
She flushed like the dawn of day
In her glad surprise. "Dear wife," he said,
"We will celebrate Arbor Day!"

—Mrs. Bella D. Clark.

25th January, A. D. 1900.

ESSAY

BY

ARTHUR J. MARBLE, Worcester.

Theme:—Budding and Grafting; and the influence of Stock upon Scion and Fruit.

Mr. President, Ladies and Gentlemen:—The subject for our thought and consideration this afternoon—the art of Grafting and Budding and their influence on Stock and Scion—is one of great antiquity, and we can only begin to consider it in the short time at our disposal. If I were guided by my own feelings, I should commence on the latter part of the subject rather than the first, but as I am told that there are some who are looking to this talk to assist them in their knowledge of the details of the art of grafting, I will begin with that part of the subject and endeavor to be as brief as possible in presenting it.

The art of grafting was known to the Chinese many centuries ago, was spoken of by many of the classic writers,—Virgil who speaks of a plum tree which bore apples after having been grafted; and Pliny who considered thunder injurious to trees grafted on the white thorn.

It is mentioned in the Bible, Romans xi. 17, where Paul says, "And if some of the branches be broken off, and thou, being a wild olive tree, wert grafted in among them, and with them partaketh of the root and fatness of the olive tree; Boast not against the branches. For if thou wert cut out of the olive tree which is wild by nature, and wert grafted contrary to nature into a good olive tree, how much more shall these which be the natural branches be grafted into their own olive tree."

We do not do it in Paul's way nowadays, but rather graft

the good branch into wild stock, nor do we make a practice of grafting a tree with its own branches. If the translation is correct I should not want to turn a second Paul loose among my trees, but rather would I call upon that genius, that great all around man, who more than any other man of whom we have a record, possessed an insight into almost everything and every subject, the great immortal Shakespeare, who says in a *Winter's Tale:*

> "You see, sweet maid, we marry
> A gentle scion to the wildest stock,
> And make conceive a bark of baser kind
> By bud of nobler race; this is an art
> Which does mend Nature; change it rather; but
> The art itself is Nature."

This was written over three hundred years ago, and if I were to study three hundred more I could not improve upon this concise and correct description. But to enlarge upon Shakespeare's beautiful imagery and go more into details.

Grafting is an operation by means of which we unite a plant or tree, or more commonly a portion of a plant or tree, to another plant or tree which will support it, and furnish it with a part of the nutriment for its growth. The tree which is grafted is called the stock. The part which is grafted on is called the graft or scion, and when used should be in good condition, fresh and not dry or mouldy. The great object of grafting is to preserve and propagate a great number of trees and plants which could not be reproduced by any other means of multiplication; and without grafting and budding, we should not have such a rich collection of fruits for all seasons of the year, while in many cases we should have to wait long years for results which we obtain almost at once by grafting, especially in that form which we call double working.

In grafting, as in many other arts, a great deal of the success of the work depends on the skill of the operator. Other essentials for success are a favorable season and mild temperature, affinity between the species, vigor of stock and scion, their intimate union and condition of sap.

In the short time at my disposal this afternoon I cannot go

into the question of the laws of the affinities of species, except that kinds to be united by grafting must be of the same botanic family. For instance, the pear is grafted on the apple and the peach on the apricot with great difficulty, while the apple and pear do well on the quince and the peach and apricot on the plum tree. As one result of grafting, those who are fond of oddities can have not only a dozen different varieties of pears or apples on the same tree, but also on the same thorn stock, at the same time, branches of the pear in fruit, the medlar, the beam tree, the service tree, the mountain ash, the European and Japanese quince, and also see there the flowers of the double and red thorns. They may gather from the same plum stock, plums, apricots, peaches, nectarines, almonds, the Canadian cherry, and flowers of the Chinese and Japanese plums and so on.

Bartlett pears have been exhibited in this hall by the late Charles Goodwin from scions grafted into an apple tree, but the results were not such as to encourage further efforts in that direction, while some varieties of pears do better grafted on quince stock than on pear, notably the Duchess.

I have known two Duchess trees in the same garden with the same soil and exposure, one on pear roots, the other on quince. The one on quince roots produced very fine pears in color, form, eating quality and size, some of them weighing sixteen ounces apiece, while on the pear roots the fruit was very much inferior in quality and only about half the size. With some other varieties the reverse will be true. And yet, still again, I have known a few cases where the pear had been grafted on to quince stock and afterwards planted so deep that the pear wood had sent out roots, and the result of that graft was two sets of roots, pear and quince, and the resulting tree and fruit the best I ever saw of the kind.

Another form of double working, the grafting of stone-seeded fruits like the cherry, plum or apricot, is not attended with the same degree of success as the grafting of fruit trees like the apple or pear. The grafting of evergreen trees on deciduous kinds presents many singularities as, for instance, the common laurel will succeed on the wild cherry, from which it differs so

much in appearance. But the grafting of deciduous trees or plants on those that are evergreen has in almost every case been attempted in vain.

I have spoken of that form of grafting that is called double working. There are two advantages gained from it. One is the saving of a part of the time and expense incurred in growing trees which, when the fruit is tested, prove worthless; another variety well known and proved can be grafted in and much time be saved, and usually a superior quality of fruit be obtained. On the list of finest fruits are some which grown in the ordinary way, or single worked, will take many years to arrive at bearing age. This time may often be shortened half and more than half by grafting into some variety of robust growth though of inferior fruit, but which seems to have some special affinity for the superior fruit bearing variety. In this form of grafting, we may sometimes see wood that single worked on the common stock used for all of that class of trees, will only grow a few inches a year, when doubled or, for illustration, cleft grafted on to a stock that had in turn been budded on to a thorn stock, it will often grow as many feet double worked as it did inches single worked, and fruit obtained in five years superior to that borne in fifteen the other way.

In every form of grafting the two parts grafted should be in perfect contact by means of the new and inner bark, in the tissue of which the sap flows. The more points of contact, the more likelihood of a complete union; and the less time between the cutting of stock and the waxing of the scion, or the tieing of the bud, the better the results to be expected. Great care should be taken in the selection of the bud or scion, that they come from a pure source, from the healthy branch of a healthy and vigorous tree, to prevent the degeneration of species and varieties. A bud from a sickly peach tree will make the future tree weak, tender and short lived.

While there are many forms of grafting, they may be grouped into three great divisions; viz., grafting by detached buds or budding with detached scions, and by approach where the scion remains attached to the parent plant while it is being joined to

the stock. This form of grafting is the most ancient of all the methods of grafting, and by it as seen in the woods and hedges, Nature has given the hint to man, to do what she had done, and so well has he followed her guidance, that now he has numerous ways of reaching the same end.

Budding is a form of grafting, so that while budding is grafting, all grafting is not budding. Under some conditions budding has some advantages over the other forms of grafting. Budding is usually done with a single bud, of which this is an example. In budding we do not use a wax, but tie with thread or matting fibre. Budding is usually done in the latter part of July, August and September on account of the buds being in the best condition, although most trees used for stock are in the best condition in the spring. In this respect differing from scion grafting where the stock and scion are in the best condition at the same time in the spring. If the buds were in the best condition in the spring, the joint conditions would be much better than they are. Why should Nature arrange this so? Does the Old Dame frown upon man's attempt to improve her handiwork? Is this a reason why our budded peach stock is such a failure? I think this fact and the budding of so much stock with buds from trees infected with the yellows, may explain the peach tree situation today, and only by the utmost care in the selection of bud and stock in the future can we hope for better results.

To bud. An eye or bud accompanied by a certain portion of bark, detached from a branch, is the scion in this method of grafting. The strip of bark attached to the eye should comprehend the entire thickness of the bark layers, not the smallest part of the inner bark must be missing. The portion of bark with bud is much like a shield, hence this form is often called shield budding, although the shape of the strip of bark which is attached to the bud graft is variable; it may be oval, square, triangular, obtuse, &c., but in any form it is called a shield bud. The buds are taken from shoots of the current year if the operation is performed in summer, and from shoots of the previous year, if the budding is done in the spring. Shoots of

medium size are preferable to very strong or very weak ones. The eyes should be well formed, and not opened, nor damaged in any way. The bud having been detached from the shoot, the bark of the stock is opened by making two incisions with the grafting knife in the shape of a T to the full depth of the bark, as shown by this sketch. Then raise the edges of the longitudinal incision A at the point of junction with the incision B. At the same time, the other hand holding the bud by the stock, slip it into the incision as quickly as possible, so that the parts underneath may not suffer from exposure to the air. Care should be taken not to remove the bud from its parent shoot until the time when it is to be inserted in the stock, and also that no other matter shall get into the incision at the same time. The bud inserted is shown at C. (*Ill.*)

This operation to be completed, needs a bandage of wool, cotton or strands of matting. The bandage is wound in a spiral manner round the stock, beginning at the upper part, as by doing so we avoid the danger of raising the bud and displacing it from the incision, which might occur when the buds are over large and broad. Grafting wax is seldom used in bud grafting. In case the bandage was likely to become loose, then the wax might serve to keep it in position and preserve the bud from the action of the air. There are many other forms of budding, such as veneer budding, double budding, &c.; but time does not allow us to linger or we might say many things about treatment after budding.

In grafting proper there are numerous methods; such as cleft-grafting, whip-grafting, crown-grafting, saddle-grafting, root-grafting and side-grafting. But the most common form used is cleft-grafting, which requires a scion with two or three buds. In ordinary cleft-grafting we have to operate on stock or branch of medium size, such a one as this. (*Ill.*) We cut it vertically a little deeper than the depth of the slanting cut of the scion, then insert the scion so that the inner bark of the scion will come in direct contact with the inner bark of the stock or branch. If you do it properly the result will be as this. The skill of the grafter is displayed in not allowing the cleft to

pinch the scion too hard on the one hand, or the scion to be too loose on the other. Some grafters incline the scion slightly inwards in the cleft. The same instructions are in order where two, three, or four scions are used on the stock, and after the scions are properly in place, the stock and scion should be covered with wax prepared for this purpose. No bandaging is necessary. All the cut or exposed surface should be covered, and the whole made air tight.

To perform these operations. It can be done with most any old thing for a tool if one is expert and skilful. I have grafted with great success with no other tools than an axe, pocket-knife, and an old saw. But I prefer better tools, and this is the best form of a grafting tool I know of. With a fine saw, a hammer, a good sharp knife, you are provided with all the tools you need. The grafting wax used is composed of beeswax, suet and resin. There are many formulas for its manufacture, but it can be bought now at our seed stores cheaper, and ofttimes better than we can make it in small lots for our own use. It is quite an art to use it and not get more wax on your person and clothes than you do on the grafts. At one time you will want cold water to keep the wax from being too soft, and at another warm water to make it pliable enough to use. But, as with the subject of budding, I must consider the question of time and pass to the latter part of my subject.

The influence of stock on scion and fruit depends largely upon the laws of the affinities of species, which are almost unknown. Most observations, hitherto made, have been in a practical rather than purely scientific spirit. In my own observations the scion has a certain direct action on the stock. One illustration of which is that in a lot of pear seedlings budded with various pear buds, you can distinguish the different varieties, say the Bartlett, Swan's Orange and others, by the roots.

Now, I also believe that there is a reflex action or influence of the stock, on not only the scion, but to a limited extent on the fruit. Starting with the proposition that action and reaction are equal, the provable fact of the influence of the scion on stock,

as shown by the difference of roots with a difference in the buds used, proves that the stock in turn must influence the scion and probably the fruit. I know now that I am taking a position that all of you will not agree with. But there are reasons for it, based upon facts which cannot be explained satisfactorily in any way but by granting some degree of stock influence upon scion and fruit. On the same soil (clay), with the same exposure and, so far as the most careful examination can determine, under the same conditions except one, stand two Baldwin apple trees. Both trees are vigorous and healthy, standing about twenty-five feet apart. One of these Baldwin trees bears an apple of dark wine color, some of them almost black; the other bears a very light colored apple, some of them almost white. Now, what condition do we find that may or can explain reasonably this variation. It may be suggested that one tree has more sunshine than the other, hence the deeper color. We carefully examine the location of the two trees and find that, so far as we can judge, there is no difference in the ration of sunlight for each tree, or if a trifle, it is against the tree of the deep red apples, instead of for it, and so we examine into all of the other conditions of soil, tillage, &c., which surround the two trees and find no difference discernable to the human senses. But at the last we come to one great and certain difference, the buds which were grafted on to the seedlings which produced these trees, must have been grafted on two different stocks, for in a thousand seedlings the chances are you will find no two alike.

Here then we have a sure and certain difference in conditions, which may be the reason for the difference in the fruit, the only reason founded on known fact, all other reasons being guess work, and not capable of being demonstrated. If you wish further proof, graft a scion of the Bartlett pear into the Baldwin and at the same time another into the quince. Repeat these operations a thousand times each and you will find uniformly the scions grafted on the quince bear good fruit, while if you succeed in making the scions grow in the Baldwin the Bartlett pears you get will be of most inferior quality, and you will never

recommend your friends to grow them that way. If you reply that is a case of the affinity of species, I will say very true, the law is working through the mutual influence of stock and scion.

On a plot of land with soil of sandy loam, the plot being about 50 by 100, with a southwest exposure, are a number of pear trees nearly all double worked. The Beurre Bosc pear tree obtained by budding a pear stock in the common way is of very slow growth, growing but a few inches a year, and taking many years to arrive at bearing condition.

When grafted into one of three or four varieties of pears, which while yielding inferior fruit are of superior stock, we get in four years fruit, and sometimes in three, under favorable conditions, fruit that is superior in form, color and size, to that grown on the budded stock. But you will say this is true of any variety! Be it so, but it is not true of every stock. That is, the scion of Beurre Bosc that is grafted into Flemish Beauty stock will produce pears that excel in form, color and size all together the same variety grafted in any other stock, on any kind of soil, or other conditions. My experiments with these two varieties cover a period of over thirty years begun on heavy clay soil and continued on light sandy soil. I have here today some photographs of Boscs grafted on the Flemish Beauty, and if you will examine them you will see how close the union and how equal the affinity.

The same is true of a Comice grafted into the Flemish Beauty as regards the closeness of union, but not as regards vigor of growth which on the Flemish Beauty tree or stock shown in the photograph is scanty, while the Comice grafted into the Bartlett becomes so vigorous in growth as to be hardly recognized, and if the fruit shall prove to be equal in quality to the vigor of growth I shall have in the future no better use for Bartlett trees than to graft them with Comice. You will see in the photograph that the Comice scion has grown so fast, its affinity for the sap furnished by the Bartlett stock so much greater than the affinity of the Bartlett for the seedling, that in turn it is budded on, that it has grown out and over the Bartlett stock about an inch on each side. I have tried the Comice, which is a not over strong

French variety, on a great many different stocks, some of which I considered the best for the purpose, but never have I met half the success, so far as vigorous growth, as with the scions grafted into the Bartlett. Another word about the Flemish Beauty as a stock for the Bartlett.

On this same lot a Flemish Beauty was grafted with the Bartlett, about sixty feet westerly a Bartlett was set out budded on seedling stock, the fruit from the seedling stock was green and rather inferior, while on the Flemish Beauty stock the Bartletts were high colored, with a tinge of red. In the case of the Seckel, also grafted into a Flemish Beauty on this same lot, the Seckel was very much higher colored than other Seckels grown on the same soil near by. I will also say, that while the Boscs grown on the Flemish Beauties were so high colored, the Boscs grow non a Boussock tree on this same lot were green and of poorer shape and size, so that the results of my grafting leave me no doubt that not only is the scion influenced by the stock but also the fruit; that if I wanted to get high color into a fruit I should graft into a tree that bore high colored fruit, and if possible at the same time pears of the same or similar shape into each other, with which idea in view I am now transforming an Idaho pear tree by grafting it with the Sheldon.

I have another example of the influence of stock on scion shown by a photograph of an ornamental tree on the old Gov. Lincoln grounds on Elm Street; you will see that the scion or graft has grown much faster than the stock, giving the tree a somewhat top-heavy appearance. Many of you have seen apple trees in orchards which presented the same conditions, of the bud or graft growing so much faster than the stock. There is a cherry tree on Austin Street in this city that illustrates the same action of scion on stock.

You will also find the reverse, and the graft will be much smaller than the stock for many years after complete union of the parts has been made. But I feel I must close, though I have but touched this great subject in which, though I have been able to find little or nothing in Bailey or other authors on Horticulture, I believe contains one of the finest opportunities for

original research to be followed with results of great benefit to all engaged in Horticulture. I hope all will feel at liberty to ask questions or add to the interest of the subject by giving their own experience.

Thanking you, Mr. President and Members, for your kind attention, I feel I cannot close this paper in more fitting manner than to repeat again those beautiful lines from Shakespeare:

> "You see, sweet maid, we marry
> A gentle scion to the wildest stock,
> And make conceive a bark of baser kind
> By bud of nobler race; this is an art
> Which does mend Nature; change it rather; but
> The art itself is Nature."

Mr. O'Connell.—Do you always set in two scions when you graft?

Mr. Marble.—No; but in a large stock I often put in two, and in a still larger three or even four.

In answer to a request to illustrate double working, Mr. Marble said, double working is simply grafting on a grafted tree. You graft a Baldwin scion, for instance, on a thorn root; then, in course of time, you want a Gravenstein, so you saw off some limbs of the Baldwin and graft in the Gravenstein scions. Double working is often done with the plum, seldom successfully with the cherry. The result of double working is, that you get fruit earlier than you would with the single. You use a fast growing tree for the first graft, such as the Vicar or Flemish Beauty, on which to graft such a pear as the Beurre Bosc, and you get fruit in four years, and I have in three, when the parent stock would take fifteen years to produce fruit.

Henry E. Rich agreed with Mr. Marble in most of his conclusions. He said he doesn't understand about the Baldwin fruit varying so much in color. His trees show little difference in color of fruit. He has noticed that the Baldwin trees that bear out of season generally produce light colored fruit. The greater difficulty in handling the pear as compared with the apple, he thought was due to the fact that the apple is a native of this country and can be found growing wild almost anywhere,

while of the pear that is not true. It is surprising under what adverse circumstances apple trees will thrive, as in low, swampy land. Mr. Foster, in Tatnuck, grafted some apple trees in low, wet ground, and by the help of pruning well he produced excellent fruit. Mr. Rich related his experience with Clapp's Favorite when it first came out. He grafted it on a Bartlett and though the tree blossomed every year it did not produce fruit. He went to a nursery and got fourteen Vicar trees of healthy growth, without paying attention to any other detail, and planted them. When they were growing well he grafted them, and in four years got crops. Mr. Rich advised anyone trying to set out an orchard to get thrifty stock and then graft, so that he can get a crop in ten years instead of having to wait twenty years for fruit.

Mr. Wheeler asked if the fruit of trees taking twenty years to mature isn't just as good as the grafted fruit. Mr. Rich said in his experience the seedling trees do not produce as large fruit nor as much of it as the grafted.

Mr. Marble.—"I suppose, Mr. Wheeler, that this is threshing over old straw, but sometimes it pays with a few grains of wheat. When I was a boy it was the saying that you can set out apple trees for your children, but plums and pears for your grandchildren. Of late years this is changed, and I know it is certain you can reduce the time on a pear tree one-half by grafting, and sometimes you can get the grafted pears in one-third the time necessary for a seedling to develop to bearing. Mr. Wheeler must remember that new people are coming up and wanting to know about these things. It has been said in some quarters that the younger element would flock to hear a discussion of budding and grafting. Had I known it was an audience all consisting of experts I was to address, I would have left out the elementary consideration of the subject. If we can get some definite knowledge of the laws of affinities of species, we may get to be as sure of peach tree grafting as we are of pears. This cannot be done by sitting down and wearing out our elbows watching the trees grow. We have got to dig into the subject and study it."

Charles E. Parker, of Holden, said he couldn't see the evidence of the influence of stock on scion. When the scion grows faster than it would on its parent stem, it only shows thriftiness of growth, due to some local condition. Too heavy growth of the scion is not desirable, and where it exceeds the stock in size the graft is likely to break off.

Mr. Marble spoke of one case where the scion is bigger than the stock by an inch or more on every side. He has tested such cases and assured Mr. Parker it would take an exertion of great strength to separate the two.

Mr. Parsons endorsed Mr. Marble's methods and said they are the same he used fifty years ago, when he was in the habit of setting 600 scions a day. Success in grafting depends largely on the skill of the operator and knowledge of what kinds will go together best. He has grafted apple scions into white birch and got a good growth the first year, and has grafted plum into peach tree, getting a growth of four feet in the first year. There is the same relation or affinity in the vegetable as in the animal kingdom. It is just as important to carefully select the stock as to set the scion. If you get the bark contact the whole length of the cutting you will get the full benefit of the stock sap. If you cut off too many of the runners you kill the tree. The man who said he had no use for grafting should remember that someone thought there was use in it before his time, for somebody must have grafted those trees of his. In cutting off the top of a branch for grafting some will pare it smooth, but better results are obtained by using a fine saw, for pared edges will not unite as soon as the sawed edges. Fifty years ago, Mr. Parsons did all the grafting in Asa Johnson's orchard. He used Russia matting to bind up the buds, but later adopted white flannel, which will draw up the moisture. He cut the horizontal slit for budding at the lower end of the vertical slit, which makes the bud more secure in its place.

Mr. Wheeler said he set out the fruit trees on his place thirty years ago and never grafted any of them. He followed the list of varieties given in the schedules of the Horticultural

Society in making his selections, and has on his place practically all the apples, pears and plums for which the society offers prizes during the year, and is able to take premiums with them. He said he has got as many dollars out of seedling trees as from the grafted ones, and the Boussock has stood him in as much as the Bartlett.

Mr. Parker read an article from the *Rural New Yorker*, written by Van Deman, in which the writer doubts that the stock has much influence on the scion. Van Deman says the facts are against such a theory. Mr. Parker said he was surprised by his friend, Mr. Wheeler, who is so backward in appreciating grafting. Mr. Parker when a boy grafted Baldwins on sweet apple trees, and in the years since he has sold carload after carload of apples from those grafted trees. He considered grafting a most important thing for fruit growers.

Mr. Marble replied to the point raised by Mr. Van Deman's article. The only way to thoroughly examine stock, scion and fruit is with the microscope, which he always does. Scions cut from the same tree under identical circumstances and grafted on different varieties of the same fruit show marked differences on close inspection. Of the forty plates of Bartlett and Bosc pears shown at an exhibition of this society you will find very few which closely resemble the type for these pears. Not only is there a variation in the fruit, but also in the scions which are cut from the growth of trees grafted under the conditions mentioned above.

Mr. Hadwen closed the discussion, remarking that it is easy to talk about things we do not know. We have some evidence of the influence of stock on scion, more of the influence of scion on root. But as to the fruit, we come to something different. The Bartlett pear has been grafted millions of times but has not lost its character, showing the powerful effect of scion. There are conditions we can get no inkling of. Why is it that each fruit and tree has the power to produce its fruit and form so distinct from all other varieties, in wood, flower and fruit. This is the great power of nature, which is something away

beyond us. It is very interesting to discuss these questions, and however much we graft we see the main law the same. Some varieties live longer than others, but all have distinctive characteristics always.

Mr. Marble said that the plants grown from seed are not twice alike in a hundred times.

Mr. Hadwen said nature doesn't intend to have all individuals alike. This individuality in plants is due, probably, to the diffusion of pollen from one flower to another, and the same combination seldom occurs twice alike. Each is slightly different. Some of the trees and flowers do in time reproduce their like. With the apple we have never known the second production, that is, the reproduction from seed exactly like the parent tree. Other varieties are brought forward. We can hardly expect it for many years to come, at least. There may be a time when wider knowledge may bring this about. There are a great many things in nature which we cannot understand in principle, but their study is interesting.

1st February, A. D. 1900.

ESSAY

BY

Ex-Gov. GEORGE SEWALL BOUTWELL, Groton, Mass.

Theme:—The Art of Public Speaking and the Arts of Public Speakers.

Ex-Governor Boutwell said his address was something of a misfit, being written to deliver to a body of law students at the Columbian University in Washington, and afterwards given at Harvard and Tufts law schools. He said he could not carry out the suggestions of the address, but would take refuge under the Shakespearean quotation that one man can preach more than twenty men can practice.

A public speaker is an actor, whether his audience be a village or a nation; so at the outset he who aspires to this art may give thought to some of the chief requirements of successful public speaking. Average proportions, a clear voice and a faculty of expression are gifts of nature, but great success has been attained by those who had none of these gifts. Demosthenes and St. Paul are shining examples.

The foundation of any success in public speaking must be laid in youth. Thomas Erskine began his career as a public speaker at two and forty years of age, and came to rank with Fox, Burke and Sheridan. But such a case is a rare exception.

There are two particulars in which physical training is of importance to the speaker. The knowledge of proper breathing is necessary, to fill the lungs at an inspiration, exhaling the breath gradually so that there may be an economical use of the breath, which is the motive power of the speaker. Physical

exercises that enlarge the chest should increase the lung capacity and vigor of the speaker. It may be his fortune to address an assembly in the open air or in halls, where the laws of acoustics, if there be any such laws, are disregarded. He must use his powers with economy. The collapse of the lungs is sure to be followed by faltering speech and a feverish condition of the muscles. The victim then resorts to the use of cold water, that worst enemy of public speakers. It is proper to observe that physical deficiencies lose their power as the intellectual faculties advance, and on the other hand the finest physical gifts and attainments become contemptible in the lack of intellectual equipment.

As necessary training I mention early and frequent practice in public speaking. The beginning of this must be laid in school and continued through college and the professional school. This requires that we devote more time to the subject of public speaking in our schools. The ability to read and write does not come by nature and in all but a very few cases the ability to speak effectively in public is not a gift. In some institutions the authorities forbid debating because it may detract from the time spent in the attainment of knowledge. But if the ability to speak well is of importance it should be given a place in the system of education.

Early and constant practice is the only method by which the faculty to speak in public can be obtained or even preserved. Whoever stands before an audience is always an object of criticism even though he may not be hissed as sometimes on the stage, and it is important to the speaker and to the cause he espouses that he presents himself and the cause in the best way. Some of you can remember the appearance and manner of Phillips and Everett and Choate. One may recognize the grace of their delivery, but must not imitate them. A speaker's manner, even his mannerisms, should be his own. The qualities of Everett, the peculiarities of Choate had many imitators. Everett's style was quiet, undemonstrative, dignified. Many of his victims found refuge in the pulpit. The imitators of Choate were not so fortunate. When he became earnest in the course

of a speech he would rise on his toes and run his hands through his hair and display other peculiarities. But his manner gave pleasure to jury, audience and even judge. His imitators, however, found nothing but ridicule whenever they exhibited themselves in public.

In contrast with Phillips and Everett I may mention Matthew Arnold, who came to this country to deliver literary lectures. His presence here was a literary event. I had the fortune to hear his lecture on the relative value of the study of the classics and of the sciences. His appearance and manner were melancholy and at best could only remind one of a country school boy trying to exhibit his oratorical powers.

Practice can be of no use except coupled with practical preparation for addressing the audience. The aim should be to know more about the subject than anyone to whom the speaker addresses himself. The young student at first can do no more than get the outline of the subject he wishes to follow and present the facts. Then read to absorb by a process of assimilation, a very good word unless it has been recently misapplied. Though at the beginning he can give only the facts, there should be at least a fresh arrangement of the subject matter and a thorough knowledge of what has been said before on the subject. Embellishment should come later. As a general thing, literary quotations should be avoided, for quotation is a crutch which must be used sparingly. Deduction or amplification of a quotation is more effective than the quotation itself.

In the beginning the speaker should seek to gain freer expression. This comes from style. Style is not a hothouse product but a growth of experience and years. Poets, we are told, are born, not made, and Byron and Bryant may be given us for examples. But young orators rarely gain prominence, for they rely on declamation, which is really but a small part of oratory. Burke's early efforts were not happy. Yet Macaulay places him at the head of all orators, ancient and modern, and Lamartine includes him among the first five orators of history; Demosthenes, Cicero, Chatham, Burke and Mirabeau is his list. Demosthenes gave his first great speech when he was thirty or

two-and-thirty. Webster, when he delivered the Plymouth oration that made his name as an orator, was thirty-eight.

Although style is a growth, it can be improved, chastened, and purified by good reading. Practice and reading constitute the two main branches of a speaker's preparation. The student should not neglect to hear good speakers. He must read widely and deeply in all branches of human investigation without thought of the influence on himself or on his style. It was the opinion of Cicero that all kinds of knowledge are useful to the orator. Especially if he is a lawyer, he will find that all information will be valuable to him at some time.

It is easy to say to the aspirant, read largely, widely and deeply, but it is difficult to prescribe exactly what to read. The speaker may read the Bible, especially the epistles of Paul, for improvement in style, but not for comment or quotation, because he will be sure to offend the sensibilities of some in his audience by a secular use or application of writings which to them are sacred. Shakespeare as the great treatise on human nature may be read from beginning to end all through life without thought of limitation. The lawyer must not only read law, constitutional, statutory and public, but a knowledge of the arts and sciences of the world is necessary to the successful advocate. Here is an opportunity for all the knowledge that can be gained.

The power of the imagination and exaggeration is called for in public speaking, the quality that is conspicuous in Milton, and indeed in all attractive poetry. The imagination and the power of skilful exaggeration is useful to the advocate, the orator and elsewhere, though at no time must the truth be lost sight of. It may not be amiss to say that imagination and exaggeration offer perils which the young would do well to avoid. Kindred to this is the tendency to relate stories to produce laughter. A story is only valuable for its application to the argument. Indulgence in this habit becomes a vice of some public speakers, and was seen in an extreme in Samuel S. Cox and Gov. Corwin of Ohio; and the latter expressed his regret, late in life, that he had been known as a joker and story teller.

An art to be acquired is that of reasoning without the appearance of following the books and rules. To learn this art there is no better book to read than Locke essay "On the Human Understanding," in which you are not obliged to agree with his views, but the reasoning is excellent.

In reading, two objects are to be kept in view: accumulation of knowledge and improvement in style. In novel reading there is little chance to increase knowledge, while on the other hand there is danger that the influence on style may be bad. Art, science, the classics, poetry, history, the records of orators who have been crowned in the favorable judgment of mankind, are the fields in which the speaker's reading should lie. One danger in reading, especially with the young, is subserviency to books. The reader must assert his right over the author and rise superior to books. Public questions and policy are largely settled by speaking and argument and hence a speaker must be familiar with the questions at issue. Whoever aspires to leadership should understand the constitutions of England and the United States.

A public speaker should be a ready writer, that style may be improved. A clear and forceful style can only be acquired by constant practice in writing. Bacon said reading makes a full man, conference, by which he meant conversation, a ready man, and writing an exact man. The speaker must be a good writer. Every speech should be written out before or after it is delivered, even if it is never published. This rule should be observed for the improvement in style, which is the only basis of hope that the speaker may reach a proficiency that will cause a demand for his speeches.

Of extemporaneous speaking there are two kinds. When a person ignorant of agriculture or horticulture is asked without previous notice to speak at an agricultural fair, the chances are ninety-nine in a hundred that his speech will be purely extemporaneous and generally pretty bad. But if a man like Agassiz is called on to speak similarly, on a subject he has studied all his life, his speech would not be extemporaneous, yet he would not have given it special preparation.

I pass over after-dinner speakers, for they are the substitute for the king's jester. Of course I do not include in this statement the addresses at gatherings for discussion of a set topic. Pleadings at the bar are seldom written, Choate being an exception. Orations and formal addresses are written, generally, though often delivered without reference to the notes. Everett's address on Washington in the fifties, which brought in the most money ever received at a lecture in this country, was written out in advance. He laid the roll of manuscript on the desk but did not turn to it during the speech. So tenacious was Everett's memory that he was never betrayed by the loss of a word. He spoke an hour and fifty-five minutes delivering the famous Phi Beta Kappa oration at Cambridge without a break, this also being committed to memory. Everett might be the most carefully trained orator of his day among the English speaking people, but he was not the greatest, for he never identified himself with any great cause or policy. His success depended too much on appearance and his arts. I was invited in 1851, along with Everett, to speak at an agricultural fair in northern New Hampshire. We saw and spoke of the fog that lay along the Connecticut valley as we rode and when he rose to speak Everett gave a brilliant word picture of that magnificent scene as the fog rolled away before the sun. It was some time afterward before it was known that the description Everett gave that day was written out and committed to memory long before the event, at the fair, and used when an opportune occasion presented itself.

Phillips' oration on the lost arts was an illustration of the opposite kind, for it was not written out, but of intellectual preparation. It was built up by an arrangement of the head topics that had no logical relation, but were disconnected. Some public speakers use head notes or catch words. Caleb Cushing was a conspicuous example of this method of preparation. The process in preparing and preserving such a speech is: first, thorough preparation by reading up the subject; then a judicial analysis of the head topics; then the notes of prime importance; having the speech taken in stenographic notes; delay until all

public notice or feeling has subsided, then correction of the manuscript, discarding all thought of the original delivery and circumstances. In this way is accomplished the best result. Webster's reply to Hayne was not given out by him as he wished it to appear until six months after its delivery.

What is known as debate is quite distinct and outside of all the branches of public speaking I have mentioned. Debate is the weapon in the hands of the lawyer and statesman. In this form of speaking the speaker must rely on himself. He must be wholly master of the topic under discussion. Timidity, or cowardice, or hesitation in any form are as fatal in debate or court as on the battle-field. The debater must be clear of thought, courageous, ready and well equipped with general knowledge. No previous preparation can be made to reply to an antagonist. Among the masters of debate in congress within recent times were Thaddeus Stevens of Pennsylvania, Fessenden of Maine, and Roscoe Conkling of New York.

The practise of reading a speech in congress is of recent growth. Isaac Hill of New Hampshire, a printer and editor, introduced the practice, and in the early forties read the first speech from notes in the senate. His action gave rise to sharp criticism from fellow members and from the press. Memory is the faculty on which all the others depend, and the philosopher who decries its importance must have depended on that faculty for his knowledge. To the speaker it is of prime importance. The public speaker needs a good memory to be able to reproduce the words and argument of opposing speakers, otherwise he will lay himself open to the damaging charge of unfair treatment of the adversary.

The speaker must not forget his audience and must assume for his hearers a high standard of capacity if not of attainment. The manner of the address must accord with the place where it is delivered. The manner suited to the open air of the prairie is not to be used in addressing justices of the supreme court, whose ears and understandings will be reached by a plea in a conversational tone. In addressing a large audience the speaker's power will reach as far as his eye and voice. If eye and

voice are directed to those in the outer circle, the people there will feel that the address is aimed at them specially, and in no other way can he hold the attention.

Knowlton has said there are as good lawyers in Boston as there were in the days of Choate and Webster. From that statement I dissent entirely. I cannot say I know the lawyers of Boston and of Massachusetts well, but I know that in the days I have referred to we had, besides the men I have mentioned, such men as Hillit, an author, Dana, the author, and many other men of ability in other fields in addition to their law. I fail to find in Boston or the State any such men today, not mentioning the greater ones like Choate and Webster and Everett. I trust the time is coming when there will be again men at the bar who will match the great lights of the past. I attribute a good deal of the lack of brilliant men today to the loss and sacrifices we made in the civil war. Of the 400,000 men who went to their death in that war are names emblazoned on the walls of all our colleges and elsewhere, who were just beginning to show promise of great things and would now have been the leaders. That is the reason why I for one am against the sacrifice of any more young men in war. The country was impoverished more by that loss of young men than in the expenditure of money.

Rufus Choate, in the trial of Albert J. Tirrel for murder, demolished a Roxbury witness brought on after the case had been closed for the people by an address in which he asked if the witness had come from the far East or from Africa at that late hour to testify, and answered his own question by saying, No, he came from that undiscovered country from whose bourne so few travellers return—Roxbury.

I express the opinion that never was the field for the educated man wider than it is today. Let no one be deterred by the saying that oratory is dead. It may be true that America cannot boast of a single great orator, that the public taste has changed. But good speakers will always have a hearing. A thought is never more powerful than when uttered through the agency of the human voice. Oratory is the art of arts. Consider the influence of the stage, which is only the mimicry of

oratory. Public speaking always has been and always will be the last hope of liberty among the nations. It was oratory that uttered through the lips of a Cicero the warning in Rome against that imperialism that has been the practice of Europe for nineteen centuries, and which this free republic is attempting to take up. The voice of the despot has ever been the terror of despots. We are witnesses daily of the value placed on the art of public speaking for the protection of property, liberty and life.

President Hadwen called upon Burton W. Potter, who said he was not prepared to speak, but had listened with great pleasure, and if he had heard the address early in life he might be able to profit by it. I think the speaker is right in his idea that the lawyers of this time do not average up to the lawyers of the times of Choate and Webster. In those days lawyers spoke from two to four hours, and sometimes four or five days were allowed for their arguments. Now the attorney is often limited to an hour, and is urged to confine himself strictly to the points at issue. Even the court-house is cut up into small rooms. The Boston court-house has hardly a room for holding court which will seat as many people, outside of those connected with the case, as there are in this room. They seem to go on the theory that they want no persons present but lawyers and court officers and the witnesses. The methods for doing business allow no chance for oratory.

When I came to the bar in Worcester it was usual for a lawyer to attempt something of a literary nature, and if he got up his brief with a little Latin or other classical allusion, it was thought to adorn his effort. But now not only the court but every one present would smile at him. I heard the Chief Justice say he didn't care for the language, but if the lawyer presented the points of his case it was all he asked. So it is not to be wondered at that there are no orators among the lawyers. Commercialism and the materialistic spirit seem to rule. Everything is brought down to science and materialism, and there is no room for the emotional. All is an appeal to the facts. The circumstances that meet lawyers are different now, and there is no

encouragement for them to come up to the standard of the past.

C. B. KNIGHT said he was glad to be present because he wanted to look once more on one of the leading lights of the time when he was a boy and saw something of the great orators mentioned. He recalled addresses of Sumner and other orators of years ago. Dr. George F. Balcom and S. H. Record complimented the speaker, and spoke of their pleasure in listening to the address.

On motion of Secretary Hixon a vote of thanks was given Ex-Governor Boutwell.

8th February, A. D. 1900.

ESSAY

BY

W. E. BRITTON, Professor of Horticulture,

Connecticut Agricultural Experiment Station, New Haven, Ct.

Theme:—Ornamental Planting of Rural Home Grounds with Native Trees and Shrubs.

Before opening the subject announced on the programme, let us pause for a moment to consider the condition of the rural homes of New England. And what is true of New England country places is doubtless true, to a greater or less extent, of homes in other portions of the United States.

If we take a trip through the agricultural districts of any one of the New England States, we shall observe many well-kept places, with signs of thrift on every hand. We know that from these homes have sprung those men who later went out into the world and became leaders in commerce, in science and in art. We have seen the best type of the rural home, and it is hard indeed to find fault with that which has been so potent a factor in building up this great nation; and yet, there is hardly a single country home which might not be made more beautiful and more attractive by a little rearrangement of the grounds, if planned and executed with judgment and good taste.

I have not mentioned that other type of farm home which we see all too frequently—where there is neither tree, nor shrub, nor vine—the very essence of desolation. A heap of rocks is there, perhaps—yes, and a few old broken wagons out near the road.

But we will not further describe the place, because it is not a pleasure to behold it and you have all seen it. We say that a poor man lives there—ah yes, poor indeed in heart and in soul is he who cannot grow a plant beside his door. He may have plenty of money, but he does not love plants.

These, then, are the two types of rural places which we wish to improve by a little good taste and energy, well directed. It would perhaps be easier to do it if we had money to buy the trees and plants, but this is unnecessary, and a home made beautiful by its master's own hands always possesses a charm and an interest, at least to each of his friends and family, that purchased beauty can never have.

I greatly enjoyed hearing your president, Mr. Hadwen, tell about the trees on his place, which were planted, or grown from seed planted, by his own hands, and which many years later were cut and the lumber used to build his house and construct the furniture therein. When we have men contented to spend their lives on one place and it passes down to other generations of the same family; when we build houses and plant trees for posterity, instead of for a single generation,—then we can have beautiful homes in America, as they have in England.

One trouble with our grounds is that too little shrubbery is used in the planting. Trees are usually present, but shrubbery is scarce.

I hope my listeners will not think that I am discriminating against country homes when I show how they may be made more attractive. I know that the city home is just as bad, but there is a better excuse for its being bad. Many houses are crowded on to a small piece of land and there are not the room and the good soil that can be found about the country home. Then, the city resident is obliged to purchase each plant and tree, unless some friend gives it to him; he cannot go and dig it from his own fields.

I need not here present any arguments in favor of beautifying the home. You all know, that the more beautiful and attractive the home, the more loath to leave are the inmates; that a love of beauty increases, as culture and refinement progress; that all

these influences of culture or lack of culture help to mark the limit of culture for future generations.

Then, too, you will understand that beautifying the home grounds makes the place more desirable and, therefore, increases its selling price in the real estate market. Prof. Bailey says that "it is the front yard that sells the farm," and I am sure that he is right, as regards the sale of farms to city people, for summer homes. It would seem as though its beauty should have a greater value to those who remain upon its grounds, not only during the summer, but through the whole year.

THE FORMAL *vs.* THE NATURALISTIC GARDEN.

I do not purpose to discuss the merits and demerits of these two styles or fashions of gardening art. You might prefer one and I the other. The formal style was the one first practiced in Europe, and the gardens of Italy remain today as the best examples of the formal garden. This style seems more appropriate in connection with wealth, or an appearance of wealth, than for the average country place. Pretentious buildings, terraces, copings, fountains, statues and an abundance of exotic or tropical plants belong to the formal garden and it is there that the carpet-bed can find a legitimate place.

The other kind is now being advocated and largely practiced in England and America. It is called naturalistic, or nature-like, because of the simplicity and naturalness of the design and because we look to nature for our models.

I shall propose this style of gardening for the rural home, because it is much less expensive at first and requires far less care in after years than the formal garden. It also seems more appropriate. Our native plants would not lend themselves well to formal treatment; and the groups and borders that we wish to make will greatly resemble some natural ones that we can find along the edge of the meadow, by the border of the woodland.

In the formal garden the loss of a single plant ruins the design, and no other kind of plant can take its place. In our

naturalistic planting we should scarcely miss one plant, and a dozen sorts might replace it with equally good effect.

EXPRESSION OF A PLACE.

A single thought or idea should dominate the arrangement of the grounds. The artist will paint a face where every feature contributes towards a single thought or feeling. He chooses for his model a face where all feeling is concentrated into a single passion; as love or hate, joy or anger.

In like manner, the landscape gardener can make the home grounds expressive of seclusion and tranquillity, which mean rest and comfort, or he can make them convey the idea of gaiety, or of wealth.

Trees have expressions of their own. The birch, the poplar and the hemlock are gay trees; round-headed trees, like the maple and the linden, are restful and suggest calmness and repose. In similar manner, some trees give an impression of coolness, while others suggest warmth.

The art of combining all the features of a place to express a single thought or feeling, that is, to form a picture, is known as landscape gardening, or landscape architecture. Some are now beginning to class it with painting, architecture, sculpture, poetry and music, as one of the fine arts.

My subject naturally falls into two divisions. (1) The improvement of the home grounds; and (2) Using native plants in making the improvements. The second division was introduced for two reasons. First: For the sake of calling attention to the real merit of our best native trees and shrubs; and Second: Because many will be induced to attempt the adornment of their home grounds, if it necessitates no great outlay, and our native trees and shrubs may be had for the digging in most of our fields and along the highways.

One always hesitates about recommending the exact treatment for a certain piece of ground, because it is largely a matter of judgment, and the preferences of the owner must be observed. Besides, there are no two landscape gardeners who would lay out a place in the same way, yet both arrangements might be

equally good. "Beauty is not absolute," it is said, "and what we see is, to a certain extent, the reflex of our own minds."* John Burroughs says: "If we think birds, we shall see birds wherever we go; If we think arrow-heads, as Thoreau did, we shall pick up arrow-heads in every field."

So it is that one person will see beauty in a landscape where another will not, while, if we really wish to see beauty, we can find it in nearly every tree and bush.

There are, however, certain general rules which we must follow to obtain satisfactory results, and these we will now consider.

PLANNING THE PICTURE.

In developing and beautifying any tract of land, whether for park or private grounds, a landscape gardener always takes an account of stock, so to speak. In other words, he makes a most careful survey of his ground and the materials upon it, noting every existing topographical, arboreal and floral feature, every water-course, lawn and dell. He then makes use of everything that can be incorporated into his design, not only saving much expense, but often preserving features that nature can fashion better than man, and trees that could not be equalled by many years of cultivation. It is a grave mistake to clear everything off the ground and then call in the landscape gardener.

1. Make grounds appear attractive from house.
2. Give place attractive appearance from street.

The very first thing to be done, then, is to make a thorough examination of the place and to note its prominent features, good and bad. Every tree, knoll and ravine must be considered. It is just as necessary to take into account the character of the adjoining property, so that in our ultimate arrangement we may obliterate, by planting, all the undesirable features of our neighbor's yard and preserve for our own pleasure the glimpse of yonder lake, meadow, cliff, or mountain.

Let us see if we can dispense with any of the existing fences; perhaps we can replace some of these with hedges. The com-

* Bailey, lectures.

mon white picket fence never harmonizes with the landscape, and if we replace it by a hedge, or substantial rail fence of neutral tint, we shall have gone far toward improving the appearance of our home. The picket fence is neither artistic nor economical; but if the fence cannot be removed or replaced, let us hide it by planting. We will also plant the Virginia Creeper where it may climb upon stone and brick buildings, for nothing looks more dreary than these buildings in the country, utterly devoid of verdure and foliage.

We must take an inventory of the trees and shrubs and make it a point not to destroy anything, until we are sure that we do not want it. As a rule, the large trees may stand as they are; occasionally one will be found that hides some favorite view and must be removed. If not too large, we can transplant it to some other portion of the grounds.

It may be necessary to do a little grading here and there, but we must not make the mistake of thinking that our land must be level, or the surface of uniform grade, for knolls and ravines add variety and give possibilities, which a level tract of land does not possess. A slope usually gives the best results and the house should stand upon a higher portion of the grounds.

After we have taken an inventory of the place, let us proceed to draw a plan to scale on paper. This will help us to decide many of the minor matters, and will be of value when planting time arrives.

If one can afford the money, he should employ a man of experience in landscape design to make his plans. If not, he must plan his own grounds. In general, it is best to keep the centre an open lawn and frame it with border shrubbery and trees. The house should be the central object, when viewed from the street, and from the house we must keep open the views most pleasing to us. Plant out the hideous ones. Put shrubs in the angles of the house by the steps, and plant vines on the porch. Unite the house and lawn by planting against the foundation. Plant all the corners where walks and drives branch, in solid masses of shrubbery. One of the greatest mistakes commonly made is to plant single specimens at equal

distances over the lawn. Such a place lacks character; no central thought or feeling pervades the whole; it has no expression; it does not make a picture. Shrubs, like trees, lose none of their individual charm if grouped with others, and by doing so we can obtain the best results. We must always consider the place as a whole and not introduce anything to mar the picture, even though it be excellent as a specimen.

Bailey writes, "More depends upon the positions which plants occupy with reference to each other and to the structural design of the place, than upon the intrinsic merits of the plants themselves." In other words, it makes less difference what we plant than where we plant it.

THE LAWN.

The first and most important single feature of our landscape is the lawn. It is the foundation of our work. It is the canvas upon which we are to paint the picture, and our brushes are the trees and shrubs. The lawn should remain intact, so far as possible, and should not be too much cut up by walks and drives, or by planting. In making a permanent lawn the soil must be prepared by deep ploughing, thorough pulverizing and fertilizing, smoothing and rolling. Before we seed it, however, we will mark roughly with a stick or hoe the outlines of the border shrubbery. After border-beds, drives and walks are located, we can seed the lawn, using about four bushels of seed per acre of either the common June grass, *Poa pratensis*, or fine bent grass, *Agrostis canina*. It is well to sow a few quarts of timothy seed per acre, to make a show the first year; it will finally be crowded out by the lawn grass.

WALKS AND DRIVES.

Walks and drives are necessary for the sake of convenience, but they are never objects of beauty. But beauty must always yield to convenience, in planning the home grounds, so, in our ideal, let us put the walks and drives just where they will be most convenient and will best serve the purposes for which they are intended, but at the same time, we will have them as incon-

spicuous and unobtrusive as possible. If there is room to have the carriage circle at one side or in the rear of the house, by all means let us put it there. The occasional visitor can much better afford to drive a few rods farther to turn his team than we can afford to be confronted for years by the increased expense of gravel or pavement, where we should see only the green velvety lawn. In few cases should the drive be straight. A gentle curve is just as direct, is far more attractive and allows of group planting along the sides, thus shutting out of view the pathway ahead. The same is true of the walks. Balanced or regular curves should not be employed.

It is sometimes desirable to make the walk and drive appear as one, especially if they have the same objective points, and it is never desirable to bisect a lawn by running a path or road through the centre of it, if it can be avoided. Sometimes it can not. In most cases, however, it is possible to have the entrance on one side of the lot and skirt the lawn near the border planting to the house, thus leaving the broad central area of green sward directly in front of the residence.

THE BACKGROUND.

One feature that seems to be essential to each well-planted place is a background. No matter how beautiful a structure is the house itself, if it stands in bold relief against the sky, it will not appear to its best advantage. It needs a background of verdure, to give it a setting when viewed from the street. We find many farm houses have this background in the shape of an orchard, and an orchard makes a good background, only the trees are too uniform in height and so lack character or expression. By planting a tall growing tree in the background this defect can be remedied and a very attractive landscape formed.

THE GROUP AND BORDER.

I have already suggested that by grouping trees and shrubs we can obtain a more satisfactory effect than by scattering them about over the place, as is an altogether too common practise.

By group we mean an irregular massing of trees or shrubs, while the word clump is used to designate an aggregation of trees or shrubs arranged in some regular or symmetrical order.

We wish to make our groups and borders, and especially the sky line, as irregular as possible, and at the same time hide or plant out the ugly objects, and preserve the beautiful views of the landscape.

Frequently low shrubbery can be used to hide a fence, but one can look over it and enjoy the adjacent scenery. Tall shrubs or trees are, of course, necessary to shut out views of buildings.

If evergreens are to be used in the border, it is well to put them on the back side, against which we may set our lower shrubs and flowers. Trees with dark masses of foliage should also be used in the background, and in front of them we can put objects of greater delicacy of form, foliage and color. On the edge of the lawn, in front of the border, is the proper place for our specimen shrubs; here they appear as a part of the border itself.

THE FLOWER BED.

The place for the flower bed is not in a circular or diamond shaped area in the centre of the lawn, directly in front of the house. Flowers can be displayed to better advantage anywhere else. Their proper place is along the front edge of the border planting, where they are backed by masses of verdure to make an appropriate setting. We shall choose mostly hardy perennials for planting on our home grounds, for these require little care and we have them in endless variety and beauty. We can well afford to dispense with the flower bed of grotesque or geometrical design, as it has no part in the naturalistic picture. If we feel the need of a little of this sort of gardening, we can arrange for it back of the house, or in some out-of-the-way portion of the grounds. But there is room for a wealth of flowers in the groups and borders, and they are more impressive if we arrange them in heavy masses. We must also plan for a succession of bloom and not place inharmonious colors side by side.

OTHER ACCESSORY FEATURES.

The water-course and the rockery add variety to a landscape, but these features are apt to be made over-prominent. They must be incidental and not objective features. Thus, a brook through one corner of the grounds and a rockery against the border planting will add gaiety and variety, but if these are placed in the centre of the lawn, we have defeated our purpose and the accessory will be the only feature noticed, while the design as a whole will make no impression upon the beholder. It is not worth while for us to introduce a purely artificial water-course, but if a natural one exists there, we will make the most of it.

The terrace belongs to the formal garden and has no place in a naturalistic landscape. There are few places where a slope will not answer every purpose better. If the terrace belongs to the architecture of the house, we can tolerate it, but it should not be a portion of our landscape gardening.

SETTING THE PLANTS.

I have already said that the ground should be ploughed, fertilized and pulverized. The more thoroughly this has been done the easier will be the planting and the better will the plants grow. For the trees we must dig good sized holes and loosen up the sub-soil in the bottom of the holes, so that the young roots may go deeper, should the season prove to be a dry one. The roots should not be crowded together in a bunch, but spread out, so that they will come in contact with the greatest possible quantity of soil. This holds the tree firm against winds and places more plant food and moisture at its disposal. In filling in about the roots it is of the greatest importance that the soil be carefully packed, so as to leave no cavities about the root system; it should come in contact with the roots on every side. Puddling with water is a good way to compact the soil about the roots. Good loam should be used for filling in about plants. Trees and plants may be transplanted either before growth begins in the spring, or after it ceases in the fall.

In planting the larger groups and borders of the home grounds,

it is well to first set the trees and those pieces of the planting which are to become the more important features of the design, filling in later with the smaller shrubs and plants.

AFTER TREATMENT OF THE PLANTING.

Our naturalistic borders and groups will need very little care to keep them in good order. As the plants grow they will crowd one another and we shall be obliged to remove some things, to give others more room. The pruning shears must also be used here and there, to remove dead branches and to check and direct the growth of living ones. I do not mean that trees and shrubs can be sheared into grotesque and conventional forms. That may do in formal gardens, but must not be allowed in our naturalistic one, because it has no place in nature; neither does it make beauty. But we shall frequently find that a shrub is as tall as we care to have it grow, and by properly clipping its branches here and there we can change the direction of its growth, without spoiling its natural form and character. A little of this judicious clipping or pinching of the tips of tender shoots will make any bush, deciduous or evergreen, thicken up and often improve its appearance. We must not expect that each tree and plant can be allowed to grow where we first place it. As the various portions of our landscape develop, we shall discover some mistakes in our planting. Some shrubs will be out of place and we take them up and set them out in new places, for the sake of bringing out some contrast in form or color, of foliage or flower.

This rearrangement, for the sake of making the picture conform to our changing ideas, is one of the pleasures of gardening, and we feel that we should not care for a garden, if we could not change the things in it.

CHARACTERISTICS THAT MAKE PLANTS VALUABLE FOR LANDSCAPE EFFECTS.

Form and color are the two chief attributes that determine the suitability of a plant for landscape work. To these we must add the qualities of hardiness and vigor, for unless plants possess them, they are not worthy of a place in our grounds.

Form is of greater importance than color, and the value of any composition depends in a large measure upon it. Some trees are round headed, others pyramidal, others vasiform; some are extremely irregular in shape. This is also true of shrubs. Then, trees vary greatly in the manner of holding light in their foliage masses; in fact, this perhaps more than any other character, is what determines their value in landscape work. Artists like to see trees with heavy, irregular shadows in their tops. This depends on the manner of branching and the character of the foliage.

As green is the prevailing color in nature's landscapes, so must it be in ours. We must have the green and spacious lawn through the centre. We need banks and masses of verdure along the borders, with here a point of shrubbery projecting upon the lawn, and there a bay or recess into the border planting. The great mass of our planting should be for its normal green color, and this should by all means predominate in the picture. Various tints and hues of green, such as dark green, yellowish green and medium green, are perfectly natural and should be sought after. Charming effects and contrasts can usually be obtained by the skilful mingling of natural foliage colors. If one wishes purple or variegated leaved plants, there is no particular objection to using them, provided they are used very sparingly and placed in the more obscure portions of the grounds. Many planters make the great mistake of placing them in conspicuous places. However interesting each may be as a specimen plant, we cannot allow it to mar the picture as a whole. Plants with purple and variegated foliage are not commonly found in nature. They are abnormal; but the fact that they are uncommon seems to make them all the more popular. To me they always suggest a condition of disease and unnaturalness which is not desirable in our landscape picture. Let us rather be content with nature's gorgeous color effects of autumn, which we cannot improve upon and which we know to be perfectly normal. To arrange shrubs and trees so as to give the most pleasing color effect in autumn is one of the important things to be considered in planting the home grounds.

Flowers also should contribute their share of color to our landscape picture. Many of the shrubs and trees bear flowers, but to a large extent we shall be obliged to depend for floral effect upon herbaceous plants. These will appear to the best advantage, if placed irregularly along the front edge of the border shrubbery, where they have a setting of green and a background. Flowers never show off so poorly as when placed in the centre of a lawn.

SCHOOL GROUNDS.

I wish to urge the improvement of rural school grounds, and what is said regarding the home grounds will also apply to the school. Most rural schools are bare and uninviting. In some portions of New England the school-houses and grounds are a disgrace to the civilization which they represent. I hope it is not so in Massachusetts. To begin with, the school-house is usually placed in some bleak spot, or perhaps in a gravel bank. There is not enough land connected with it for the boys to play upon and so they trespass upon the neighboring fields. What land they have is frequently rather poor for gardening purposes.

We can improve these grounds by obtaining more land (there should be at least half an acre), and if a new school-house is to be constructed, obtain a pleasant site for it. We can make an enclosure by hiding the fences and concealing the boundaries, and all the outhouses should be concealed by planting. Have as few walks and drives as possible and perhaps indicate the limits of the boys' and girls' playgrounds by planting. Only native shrubs and plants should be used in ornamenting the school grounds, and the children will not break them down or injure them, if properly taught to appreciate them. We might go a step further and give the children much incidental instruction about the care of plants and about how they grow and reproduce their kind.

DECIDUOUS TREES.

The elm and the sugar maple have long been considered valuable trees, and have been planted almost to the exclusion of other native trees of great merit. Though the elm and the

maple are perhaps the best trees we have, I feel sure that they will still be used to such an extent for street planting that, for variety's sake, we can introduce something else upon our home grounds. The oaks, for instance, deserve much greater attention than they receive. The pin oak, *Quercus palustris*, is now being used in some places for street planting; the red oak, the yellow oak and the black oak are all fine trees, symbolic of strength and endurance. The white ash, *Fraxinus Americana*, is an excellent tree, and the beech, *Fagus ferruginea*, is one of the best, as well as one of the most sadly neglected of our native trees. Its gray branches and trunk are especially attractive in winter, when seen against the green hemlock boughs. Flowering dogwood, *Cornus florida*, is an attractive flat-topped tree, which is a mass of snowy whiteness in May, and the foliage turns a dull red color in autumn. The pepperidge, or tupelo, *Nyssa sylvatica*, is another tree of a similar type, but it grows larger. Its flowers are inconspicuous, but the autumn colors are most gorgeous. The pepperidge well deserves a place in the home grounds. The birches, especially the black, yellow and paper birches, are excellent trees. Poplars and willows are desirable when a quick growth is needed to screen some unsightly object, but they are short-lived trees and should be removed as soon as more permanent trees can be grown to take their places. A singular and beautiful tree is the tulip, *Liriodendron*, and I am glad to see it coming into favor.

The basswood or linden has merit and is a symmetrical round-headed tree, suggestive of tranquillity and rest. A small tree, which we must by no means exclude from our natural border, is the Shad or June-berry, *Amelanchier Canadensis*. It is one of the earliest to blossom in the spring, and is a mass of white before the leaves have expanded.

A curious, but attractive, tree is the honey locust, *Gleditsia tricanthos*, with its long, sharp spines. It is a long-lived tree, however, and is well worth more attention than it receives.

The sassafras, red maple, larch, hickory and the hornbeam should also be included in our list of valuable trees, but I fear the list has already become too large for our plot of ground.

DECIDUOUS SHRUBS.

We are fortunate in having a very large number of desirable native deciduous shrubs. We must include as among the best a few which are commonly regarded as undesirable by farmers, because they grow naturally along the hedge-rows and require cutting every year, to keep them from encroaching upon the fields and meadows.

The sumac is one of the most decorative of these. Both the smooth sumac, *Rhus glabra*, and the staghorn, *R. hirta*, are desirable ornamental shrubs. The foliage is excellent, turning a most brilliant crimson in autumn, and the bright red fruit remains throughout the cold weather—interesting, and a bit of color in the dreary landscape. The smooth sumac has leaves dark green above and nearly white beneath, and both colors show in the summer breezes.

The Viburnums may all be classed as desirable shrubs, *lentago lantanoides* and *dentatum* being especially attractive. *V. Opulus* is also good.

As it grows naturally the button bush, *Cephalanthus occidentalis*, is a most excellent shrub. The foliage is bright and clean and covers well to the ground. The seeds persist in spherical heads long after the globe-like flowers have passed. The flowers are white and appear in August.

The black alder, *Ilex verticillata*, is now used occasionally and makes a most beautiful sight in autumn, when covered with bright red berries.

Red osier dogwood gives us red twigs which are so attractive in winter, especially when used in connection with the yellow ones of willow.

The wild azaleas, *Nudiflora* and *viscosa*, are most desirable shrubs and should receive further recognition.

The sweet pepper bush, *Clethra alnifolia*, has many attractions.

The common native alder, *Alnus incana*, gives most excellent foliage effects and will be a good plant to use for prominent situations in our groups and borders.

Though introduced into America, our common barberry is

usually regarded as a native and for our purposes we may so consider it. This plant is a decorative one and may be freely used in landscape work with good effect.

Our common high bush blueberry, *Vaccinium corymbosum*, is exceedingly valuable for its attractive autumn colors.

The species of *Crataegus* are all desirable as are the wild roses, the spice bush, the bayberry, the hazel-nut and a host of others, which we cannot mention here.

EVERGREEN TREES.

The hemlock is one of the finest of all our evergreens, native or introduced. It is, I am glad to say, coming into favor and has been used extensively for park planting during the past few years. As a young tree it is graceful in the extreme and makes good single specimens, or composes well with other trees.

Our common white pine must always be mentioned as a tree of beauty and merit for ornamental purposes. The pitch pine, too, *Pinus rigida*, often grows into shapes which are peculiarly picturesque and attractive.

If spruces are desired, why not use our common black spruce, *Picea nigra*, of the forests, instead of planting the Norway spruce everywhere? The white spruce, *P. alba*, is a very handsome tree. The fir balsam, *Abies balsamea*, is worthy of more notice, being especially handsome when young and grown as a specimen tree upon the lawn.

Where a columnar form is desired, I know of nothing in all the realm of horticulture better than the common red cedar, *Juniperus Virginiana*. This tree is characteristic of Connecticut hill-slopes and one of the most charming features of her scenery. Not least of the many merits that this tree possesses is the great variety of forms into which it grows naturally. If we examine the cedars on a single well covered hillside, we are sure to find some which are columnar in form and all the way of a size, while others are round-topped and full; some clothed with green to the ground, while others show their brown shredded stems between the green of the sward and the evergreen boughs. Have you ever noticed how dark these trees look in

cold weather? In certain lights they appear nearly black in the landscape and afford striking contrasts during the winter months. When arranged in groups cedars are especially picturesque, but are also of value to use in connection with borders of shrubbery, for the sake of variety and to break the regularity of the sky line. A tall cedar has much the same effect, if planted beyond a stretch of low shrubbery, that the church spire has in the midst of the neighboring village.

EVERGREEN SHRUBS.

Perhaps the very best low evergreen which is a native of New England is the low juniper. This makes an excellent foreground shrub and occurs in a great variety of forms and colors. Some of the finest specimens which I have ever seen are growing wild in a pasture at Edgewood, the home of Donald G. Mitchell, near New Haven.

The ground hemlock, *Taxus Americana*, is also useful in some places, especially about rock work.

If I were to suggest a native shrub to take the place of the introduced rhododendron, I should name the mountain laurel, *Kalmia latifolia*. Though its leaves are smaller, it is an evergreen more hardy than the rhododendrons; will thrive in dry soil and the flowers are of better color than many rhododendron blossoms. It transplants well in the fall and will grow in sun or shade.

Our holly, *Ilex opaca*, is a most attractive evergreen shrub and is, I believe, hardy in this latitude.

VINES.

Of all the vines, native or introduced, I doubt if we can select one that for all situations and for all purposes will surpass or equal the Virginia creeper, *Ampelopsis quinquefolia*. It does not cling as closely to buildings as the Boston ivy, but it gives greater variety of form and color throughout the season and has the very great merit of being extremely hardy and vigorous in all situations. Its autumn coloring is especially brilliant.

The trumpet creeper, *Tecoma radicans*, is another good climber that can be used advantageously upon the porch or fence, and we must not overlook the merits of our native clematis for landscape effects.

The moonseed, *Menispermum*, is a beautiful climber and deserves more attention than it now receives.

The bitter-sweet, *Celastrus scandens*, is a good vine through the summer and is especially valuable on account of its autumn and winter effects.

HERBACEOUS PLANTS.

Our list of first rate herbaceous plants is somewhat shorter than the list of trees or shrubs. Of course, there are a great many beautiful and interesting species that we wish to have on the grounds, like the violets, hepaticas and anemones, which are rather small to count for much in making a picture. The wild columbine, *Aquilegia Canadensis*, is a most decorative plant and seems especially well placed, if planted in the rockery. The several species of *Cypripedium* may be similarly planted.

Our three kinds of lilies are excellent for the border and should be used lavishly. The wood lily, *L. Philadelphicum*, is a low plant with a red blossom. More showy is the yellow lily, *L. Canadense*, which grows from two to five feet tall and bears many flowers. But finest of them all is the Turk's-cap lily, *L. superbum*, which sometimes reaches the height of seven feet and is well covered with flowers. One plant which I discovered last season bore thirty blossoms. The lilies bloom during July and August. Of the same season is the scarlet lobelia, or cardinal flower, *L. cardinalis*. By transplanting roots of this plant to moist situations in the border, we can have bits of scarlet color that are effective.

One of our very best plants is the mallow *Hibiscus*. Two forms are commonly cultivated in gardens; one produces a pink flower, the other has a white blossom with a crimson eye, and is rather more vigorous than the pink form. Though the *Hibiscus* grows wild in wet places along the coast, it thrives equally well

when transplanted to much drier situations. Too much cannot be said in praise of this plant.

Another excellent plant is the orange milkweed, *Asclepias tuberosa*. The bright orange of its blossom is a color hard to match in any other flower. Other attractive plants are the false Solomon's seal, the bugbane and *Eupatorium ageratoides*. The wild cone flowers are also worthy of cultivation, especially *Rudbeckia hirta* and *R. laciniata*. The much praised "Golden Glow" is a double form of the latter and is an excellent thing. The various species of *Helianthus*, or wild sunflower, give a profusion of yellow bloom during the latter part of the season. *Coreopsis lanceolata*, an exquisite flower, is a native south of our range. New Jersey tea, *Ceanothus Americanus*, is a desirable plant and gives white feathery blossoms about the first of July.

Then come all the wealth of golden rod and wild asters that makes the autumn hillsides and roadsides so beautiful. For color and splendor we can scarcely find their equal. Many of these we can place in our border, though we must not be disappointed if they lose some of their grace and beauty by an increased vigor of plant, caused by cultivation.

15th February, A. D. 1900.

ESSAY

BY

MARY E. CUTLER, Holliston, Mass.

Theme:—Remunerative Out-Door Occupations for Women.

It is a matter of common remark, that the second half of this century has witnessed a tremendous extension of the sphere of women's work.

While clerical and stenographic employment on the one hand, and factory labor on the other, have furnished the chief fields for this extension, still almost every department of business has experienced the infusion of the new element, even the professions opening their doors, and women doctors, lawyers and clergymen becoming by no means uncommon.

Agriculture is no exception to the rule. The world has not heard so much about the woman farmer; but she exists and flourishes, indeed is increasing and multiplying upon the face of the earth.

The violent manual labor involved in field work possesses no attraction for American women; but in many branches of farming, horticulture, floriculture, poultry raising, etc., women occupy a large portion of the opening.

Fifty years ago no occupations were open to women, except cooking, sewing, teaching and factory work. Few women were sufficiently educated to teach. Those who were, received from $4.00 to $8.00 a month, and "boarded 'round," while men for the same service were given $30.00 a month and board. In that day not even woman herself had so much as a dream of entering the professions of law, medicine and theology. When the genius of Harriet Hosmer impelled her to take up sculpture,

she traveled from one end of the country to the other, begging for an opportunity to make the necessary study of anatomy. When Elizabeth Blackwell determined to consecrate her life to medicine, not one of the standard medical colleges would admit her as a student, and society ostracized her.

The close of the 19th century finds every trade, vocation and profession open to women, and every opportunity at their command for preparing themselves to follow these occupations.

A vast amount of the household drudgery that once monopolized the whole time and strength of the mothers and daughters has been turned over to machinery; a money value is placed upon the labor of women. Woman is no longer compelled to marry for support. In the world of literature and art women divide honors with men, and the civil service rules have secured for them thousands of remunerative positions under the Government. What the woman of the 20th century will be, I cannot say; one hundred years with the greater equality, the richer opportunities, certain to come, will make her a being as much nobler, higher, and more gifted with every power for good, as the woman of today is superior in these qualities to her sister of a century ago.

Perhaps no department is better suited to woman's work than is that commonly known as glass farming, which is especially adapted to women, for several reasons. First, it necessitates careful advance calculation, a matter in which women excel. Again, the physical labor involved is comparatively light, and so fitted to one whose strength is not robust. Thirdly, in it there is room for much artistic taste and discrimination, certainly women's specialties. Glass farming, that is the use of plant houses, greenhouses, pits, frames, etc., is an ancient idea; we find mention of it in the Latin writers of the first century, Martial, Columella and Pliny, and we have no reason to think that this was the beginning. But until recent years, glass farming has been regarded as a mere luxury, a pastime for the wealthy, rather than a practical method of supplying the world with necessaries.

During the very years, however, in which women were enter-

ing the field of industry, this conception changed and for the first time glass farming began to be regarded seriously as a department of agriculture.

Raising flowers in greenhouses for market is a profession for which women are proving themselves especially adapted. It is a business that has to be learned like any other; but, given a little experience, added to natural qualifications, such as perseverance, energy and common sense, success is sure to follow. The plant I own and am running, was started on two hundred and fifty dollars, and I have built up a large, well paying business. With $250.00 and an acre of land a practical woman of good health can earn a living for herself from the beginning, and keep enlarging her plant all the time besides. Given an acre of land, the first requisite is of course a greenhouse; a modest one can be built for one hundred dollars, and a rough heating apparatus put in for fifty. The cost of plants and seeds is slight, as the large firms make easy terms for the trade, and the other expenses, such as tools, fertilizers, cold frames for starting plants, etc., would amount to little on so small a scale.

One great advantage is that the returns are so quick. With a greenhouse in running order by the first of September, crops of several kinds can be marketed before Christmas. The chrysanthemums come first, then follow violets, carnations, tulips, hyacinths, narcissus, calla and Easter lilies, spirea, roses, etc. The secret of success is to utilize every inch of space. In a vegetable house the tables can be filled with lettuce, or cucumbers, or tomatoes, while rhubarb and mushrooms can be grown on the ground underneath.

A good head for planning is a necessity, as no time must be wasted between crops. It is necessary to know what kind of fertilizer suits each crop best. Some thrive best with bone meal, some with leaf mold, or pasture turf. There are special fertilizers for special crops. The location of such a venture as this is more than half its success. At first thought one would think that the neighborhood of a large city was the best place; but this is not necessarily so, as one is at the mercy of commission agents and middle men.

The best place is a small town or community of prosperous people, retired tradesmen, who do not travel, but make their homes there all the year.

Flowers, in a prosperous community, you do not have to market; customers will come to you for them. I sell all my flowers at my greenhouses. Parties, balls, receptions, weddings are constantly taking place. The profit is in decorating and set pieces, rather than in cut flowers.

A great advantage in this profession is that there is so much room in it for originality and taste. A branch in which a great deal of money can be made is in the sale of plants; all kinds of bedding plants are wanted in May and June for lawns, parks, cemeteries, cottages at the seashore, vases, and wayside nooks. Pots filled with two or three California violet plants in bloom, brought 75 cents in this city last winter. Pansies are in demand in their season. Ferns, palms and orchids grace your dining-rooms, churches, etc.

The filling of window-boxes, designing new effects in jardinieres and hanging baskets, is a line in which a woman can be very successful.

The rose, in all its colors, is one of the most profitable flowers to grow under glass. The demand is great, and people must have them. It was about 1874 that the first decided ground swell in floriculture was felt. All eyes were being turned toward the rose. The varieties then grown were far from satisfactory; larger flowers and a better grade were demanded, and in a short time the growers made gigantic strides in their efforts to produce new hybrids.

The carnation, the violet, and each flower in its turn absorbed the attention of the floriculturists, which eventually resulted in the perfection of growth, coloring, and many varieties.

In the last quarter century we have seen introduced the Bermuda lily, Crozy cannas and their seedlings. We have seen roses propagated during the summer, and distributed by millions and tens of millions, by mail and express. We have seen the home grower successfully compete in budded roses with the foreigner. Cheap and good land, with energy, have beaten

cheap labor. We have had asparagus plumosus and sprengerii; we have had the crimson rambler rose; we have the bay trees dotting our streets. We have seen great botanic gardens, like the Bronx, brought into being. We have the wonderful development of the Arnold Arboretum, the metropolitan system of parks in Boston. Have seen the Back Bay fens converted from a swamp into a garden; and I desire to say that in all which tends to the advancement of horticulture along its best and broadest lines, the Massachusetts and Worcester County Horticultural Societies have played, and are playing, a most prominent part. The raising of roses is a much more difficult branch of the business, and should be taken up only after a certain amount of experience. When this is gained, considerable money may be made in it.

Did you ever stop to think where and how the beautiful flowers were grown? The flower business has great prizes to offer if one is of an investigating turn of mind. The thirty-five hundred dollars that was received for the Mrs. Lawson pink is inspiring to one thinking of going into the business. It is wonderfully interesting to create new flowers, to make those bloom double that have heretofore been single, and to paint the lily a new color; it is really scientific work. It is adapted to women, and so profitable has it generally proved that it is strange so few have taken it up.

If a woman decides to take up flower and vegetable culture as a profession, she ought, if it be possible, to fit herself for it by a previous course of study in some agricultural college; she should be familiar with botany and chemistry. If she has a chance to travel and study the flora of other countries, she has the greater chance of making a name for herself.

Miss Myra Dock, of Philadelphia, is an illustration. She was sent out by the Park Commissioners to study the park system in Europe. Trees should be studied as well as landscape gardening. Perhaps some day women may be Park Commissioners, and parks today show the need of some new element in that department of civic life.

The demand and supply for carnation pinks never was so

great as at the present time. Women are raising these, all over the country, with great success. Miss Evelyn B. Taylor, a florist of Milford, Mass., has two carnation houses, one 19 by 37 feet, another 87 by 26 feet. She gives all her time to the work, propagating and growing her own stock, and caring for the houses. She has found a market for every thing in her own town, which is much more profitable than selling on commission. She has perfect health, and enjoys her work, and supports her father and mother.

In these progressive times the handle of the agricultural tool is coming to know the grasp of the woman's hand almost as well as the needle or the broom, and many women are making reputations as farmers of progress. Among the agriculturists are wives, widows and maidens, women who have begun with small means, women of wealth who have entered the ranks for the pleasure they could get out of it, or for philanthropic purposes. One and all are bright, intelligent women, and the large majority are educated and cultured. Some are in partnership with men, others own and manage farms for themselves, while many manage farms for other people. Careful investigation shows that these women have distinguished themselves by their skill and executive ability. In some important specialties such as flower-seed growing, poultry raising, fancy dairying, and the growing of raisins and nuts, they have been successful pioneers. Their farms are scattered all through the country, on the uplands and in the lowlands, among the valleys, and even on the mountain sides. They are found in the largest numbers in New York, Illinois, Ohio, Indiana, Iowa, Kansas, Michigan, Wisconsin, Pennsylvania, Minnesota, Nebraska, California, Maine, South Dakota, Nevada, Arizona and Wyoming. Some are cultivating their thousands of acres, using their steam engine as a plowman. The majority conduct farms of more than 100 acres, while a few are contented with a single acre, depending on the spade and hoe. Women lead in poultry culture. They began a decade ago. It has been an uphill struggle against prejudices. Few, it is said, make a failure of it, and the time, they claim, will soon come when women will control the industry

here in America. It pays a greater interest on the investment than any other branch of farming.

The notable success of the few New England women farmers proves conclusively that education and brains are needed in the business. Two young women in Compton, R. I., are examples of college graduates going directly into outdoor work. These women saw a chance to make money by supplying Newport's epicures with dainties. Their spring lamb, young geese, and hothouse grapes bring fancy prices, and there isn't an "ology" that they studied but contributes in some way to their success. Now that Secretary Wilson is studying over New England's abandoned farms to see what they need to bring them back to fertility and prosperity, he might do worse than advise giving these deserted acres into the care of women.

A flourishing little farm of three acres on the north end of Lake Champlain produces yearly more than two and a half tons of honey and 1,500 ducks, besides quantities of fruit, which is marketed at the neighboring summer hotels. It is owned and run by Miss Frances E. Wheeler, for several years a stenographer and type-writer. It seems quite a change from a stenographer's place in New York to the ownership and superintendence of a duck and bee farm. Yet in looking backward the sense of harmony deepens between the two occupations. I have grown to understand that it does not so much matter *what* we do, as *how we do it*, that the qualities required for a successful stenographer are equally necessary for a duck and bee rancher. In both callings, if success is to be attained, ignorance must be overcome by perseverance, tact and common sense. Miss Wheeler learned stenography in the first class of the kind formed by the Young Women's Christian Association, at No. 7 East 15th street. After several years of office work, her hands became disabled, and the problem arose, how to save the little family home at Chazy, N. Y., with its bee plant.

Many women have been successful in growing tomatoes in hothouses, being started in the fall from seed. For the house-grown product, the price is sometimes as high as a dollar a pound, and they continue to yield good profits to the grower

until shipments begin to arrive from the South. There are but a very few varieties suited for forcing, and among these are Aristocrat and May's Favorite.

It may be of interest for you to know where this plant, the tomato, was first grown. The story is told, that a good many years ago, a man recently arrived from the Bermuda Islands was committed to a Pennsylvania jail. He had with him a few seeds, which he planted in the jail yard; but before the plants came to maturity he was discharged. The plants bore a strange fruit, which, as it ripened, changed from green to red, and was greatly admired by the prisoners. The matron of the jail, sure that it was poisonous, cautioned all the inmates against eating the fruit, but as she desired to save specimens of it, she planted some of the seeds the following spring, and just as the fruit was well ripened, the man from Bermuda revisited the jail and asked to see the plant. He called for pepper, salt and vinegar, and to the astonishment and horror of his spectators, ate the fruit with a relish. Having finished, he told them that this strange fruit was a tomato, or translated into English, a Love Apple, and that it was wholesome and nutritious. The seeds were therefore carefully preserved and distributed among friends and neighbors who cultivated it as a curiosity, but it was long years before prejudice gave way to appetite, and this now most popular vegetable came into general use. Even now many people remember it as an ornamental rather than useful plant.

A few years since, there was a scare arising from the doubtfully authorized story that the tomato produced cancers when eaten freely, but it was of the shortest duration, due to the lack of any proof of harmful results from its use, and to the common sense of consumers, who recognized in it one of the most useful vegetables. Probably more tomatoes are canned than any other fruit or vegetable, as they can be served in so many ways. Eaten raw with salt, pepper and vinegar or with a salad dressing, plainly stewed, in sauces, soups, preserves and pickles. The tomato is ever ready for an emergency, and the provident housekeeper is sure to have it in reserve.

One of the most successful tomato growers I know of is an

English woman; they are grown to perfection, and she always finds a ready sale for them at some of the leading hotels in Boston. Under the tables can be seen beds of mushrooms, and she is as equally successful in growing that vegetable, giving all her time to this work.

I hope it is no egotism to state that in both the floral and vegetable departments of horticulture, in which I have been engaged for the past fifteen years, I have been entirely successful. You may wonder why I, a woman, should be engaged in this occupation. But I was brought up in the business of market gardening. My father followed it before me, and being led to it both by circumstances and inclination, I naturally took it up. I must have had a strong love for the work, or I should not have followed it as I have continuously until now. I shall endeavor to show the business of gardening for women to be a profitable one. But let none deceive themselves by supposing that these profits are attainable without steady personal application. My home of sixty-eight acres is located in Holliston, Mass., on the Boston & Albany R. R., twenty-five miles from Boston, thus being well located for gardening. The land gently slopes to the southeast and northwest, so that I can get two crops of early vegetables on the southeast slope, and peach orchards and later crops on the northwest. The branches that I am most interested and engaged in are flowers, vegetables and fruits. Peach orchards occupy a large corner of my farm, and *have been* a source of profit. The prospect so far this season is favorable for a full crop of peaches, as frequent tests show. Of course we cannot tell what will happen yet before May.

A number of peach growers in my locality have lifted mortgages from their farms by means of their peach crops.

When the trees are young, vegetables and small fruits can be grown between the rows, thus using all the available land. Apples, pears, plums and small fruits I also grow for profit.

The question that confronts us today is, what can we do with the vast army of poor women who crowd the tenement houses of our vast cities (many of them having no permanent homes, and in many cases do not care for any), to educate, elevate and

help them to start a new life, and engage in some industrious, honest and honorable employment. But to cling to my subject, I wish they might be induced to go into the country, there is room for all, hundreds and thousands of acres of virgin soil in our United States are still uncultivated. A large proportion of these women earn but a mere pittance per day, and eke out an existence somehow. They will tell you they like city life, are satisfied, and know no other. They are a good deal like the woman who put nutmeg into her custard pies, she did not like the taste of it, neither did her husband, but that was the rule, she always had put it in and supposed she always should.

In the city of Lawrence, Mass., lives a father, mother, seven children and two boarders. They occupy four rooms in a low tenement house. The house does not front on a street, neither is it the second one back, but the third, where Heaven's sunlight never shines through the windows. They work in the Pemberton mills. The father earns a dollar a day, the mother a little less. The mill gate is locked at 7 and 1 o'clock, and if late they lose a half day's work. The mother does what little work she can mornings, evenings and Sundays. This is only one illustration of what might be told.

The women of this country must organize more charitable societies, and help place the lower class of people on a higher level if possible. About five miles from my home, in Sherborn, Mass., stands the State Reformatory Prison for abandoned women. The average number of inmates is three hundred and fifty. The work is all done by the prisoners. I have visited every part of it, from laundry to workshop, and it is the pattern of neatness. They do all the work in the greenhouses, poultry and duck houses. All the vegetables consumed throughout the year are raised on the grounds in their season by the inmates.

It is said that the wives and sisters of the soldiers in the 20th Kansas regiment, when in the Philippines, went out into the deserted fields to work. The crops needed attention, and there was no one else to give it, as nearly all the members of the regiment were farmers, and there are now hundreds of girls at work on the farms.

It is hoped that women will not be driven into the fields by such circumstances, but that more of them will be led to realize that an existence spent in healthy, honest out-of-door work, is an existence which will enable soul and body to expand, as well as the mind. Let me urge the women of this society and city to engage in more out-of-door work, and bask in Heaven's sunlight; fewer headaches would be heard of and nervous prostration would be unknown. Have a flower or vegetable garden, take care of it all yourself, don't neglect it. You remember the story of little Johnnie, when asked if he liked to go to sunday-school, replied, "Guessed he should stick to it until after the picnic was over." Stick to your garden; let the picnic last all summer, it will do you good. Where my gardens are today once was rocky land, covered with bushes of all kinds, now a mowing-machine can run over any part of it, and the result has been accomplished by nothing more than energy and perseverance.

22nd February, A. D. 1900.

ESSAY

BY

BURTON W. POTTER, Esq.

Theme:—The Relation of Good Roads to Horticulture and Agriculture.

The time has arrived when it is no longer necessary to argue in favor of good roads or to describe their proper construction, for their value and importance are known to everybody and nearly everybody now knows how they should be constructed. The road problem of today is how to build them within the means of the people and how to manage and how to keep them in repair after they are built. On general principles a ten thousand dollar a mile road is better than a five thousand dollar a mile road just as a ten thousand dollar house is better than a five thousand dollar house; but for practical purposes a five thousand dollar house is just as useful and durable and for the great majority of people more comfortable and convenient than a ten thousand dollar one. Likewise the ordinary country road costing two or three thousand dollars per mile is just as durable and for the great majority of travellers is just as useful as a road costing twice or three times as much. A well drained country road with a substratum of field stone eighteen or twenty inches deep covered with good road gravel is just as good for all practical purposes and in some respects is better than a road with a substratum of stone four or five feet deep covered with crushed granite. The latter road is noisier, more expensive to keep in repair, and harder for horses and wagons. At any rate six hundred miles of the cheaper road is better for the people than two hundred miles of the costlier road. It is of vital importance

to the rural population to have good roads carried into all sections of the country as quickly as possible.

The people of this Commonwealth cannot afford to checker the State with roads costing ten or twelve thousand dollars a mile: but they can afford and it is for their interest to build good roads everywhere. And it is for their interest also to have these roads under the care and control of the people who live where the roads are located. Under the present system nobody nearer than the State officials in Boston are responsible for the care and management of our State roads. In case of a defect therein it is nobody's business to notify these officials of such defect and nobody except them can repair the defect. If they are covered with snow four feet deep neither these officials nor anybody else are required to remove the snow or to make the roads passable in any other way. If the people of a town in which a State road is located desire to build a cross walk over or a sewer under the same they can only do so by permission of these State officials. The law relative to the matter is contrary to our theory of local self government and is in accord with the opinions of those who think it would be wise to have our schools, jails and poor-farms managed and controlled from the State House. The most intelligent and philosophic foreigners who have visited our country like DeTocqueville and James Bryce, as well as our great thinkers and statesmen, have claimed that our township government is the glory of New England and the basic principles on which our republican government rests. If this is so, then we should resist with jealous vigilance every encroachment upon the domain of our local self government.

Hence would it not be best for our roads to be under the care and control of our local communities? And would it not be best for the State to aid the towns by a reasonable contribution towards the expense of every mile of highway built by such towns in accordance with the requirements of law? When the present highway act was passed it was thought that a piece of State road in a town would be such an object lesson in good road building that the town would immediately proceed to make all the other roads in the town similar to it, but as a matter of fact it fails to induce

the town to make its roads any better than they were before. It would seem in some cases to operate against the building of good roads by the town, inasmuch as the people seem disposed to believe that if they wait long enough the State will come and turn their town roads into State highways.

On the other hand if the law required every town to construct each year a certain amount of good road based upon its property and population as compared with the population and wealth of other towns and cities of the State and then allowed the town to draw from the State treasury one-half the expense as soon as the road had been approved and accepted by some tribunal appointed for the purpose, would not good roads be extended more rapidly in all directions than under the present system? The solution of the problem is to be found in learning how to improve our ordinary highways without the expenditure of more money than we are able to pay. A very ordinary cook is able to get up a passable dinner with an abundance of everything to do with, but a good cook is able to get up a better one with very much less to do with. Then we need most of all good road makers, so skilful and efficient that they could bring about good results in road making on small appropriations. This may seem like asking them to make bricks without straw, but I firmly believe that our country roads could be greatly improved without a lavish expenditure of money under competent management. However, the good roads are the desideratum of the present situation, and the system that will most speedily accomplish the thing with equal burdens and benefits for all, is the system to be commended, for we want the roads and we want them quick.

But what is the relation of good roads to agriculture and horticulture? Good roads are of more value and importance to farmers than to anybody else. A good road abridges distance and facilitates the transportation of crops and thereby brings the markets nearer to those who live beside it or in its vicinity. A good road always has a good grade and consequently a heavy load can be drawn over it more easily and a light load with more rapidity than over a poor road. Therefore the farmer who lives beside a good road ten or twenty miles from market is in reality

nearer to the market than the farmer who lives upon a poor road only five or ten miles away. And besides his horses, his wagons and his harnesses will last longer and be kept in order at less expense than those of the owner who travels upon a poor road. His wife will be happier and live longer, his children will be more likely to stick to the farm, he himself will be a more civilized man, and they all will be more constant attendants at church, school and public meetings than the abutters upon a poor road.

In the next place, the good road increases the value of his land. When an intelligent purchaser looks for a farm, he looks for it by the side of or in close proximity to a good road, and he will pay more for one thus situated than for one on a poor road.

Increased sociability is another advantage of good roads. Social isolation is the rule among people who have to travel poor roads to see each other. People beyond the limits of sidewalks in our cities and villages would be more neighborly if they could conveniently reach each other's houses, especially in the evening. After the day's work is done the voices of the night seem to awaken in the human breast a desire for communion with the living and the dead. Then we like to cross our neighbors' threshold, and exchange greetings and talk over matters of mutual interest and concern. Then, if ever, the country people have the time and inclination to gather in family and neighborhood groups for the exchange of opinion and recreative entertainment. This goodly phase of human life ought to be cultivated and developed in the country; and inasmuch as good roads would help to cultivate and develop it, they ought to be an object of care and improvement on the part of the public officials in every community.

If there were footpaths in our country roads, the social intercourse of the people would be encouraged still more. Should there be footwalks in our country roads? is a question which our road-makers have answered negatively by their actions, for there are very few roads in this country with footpaths in them. The Romans were the best road-makers in ancient times,

and their road law is the basis of modern highway legislation. Their magnificent consular roads, which led from the forum in Rome to every important province in the empire, with their raised footways, in the middle or alongside, are worthy of modern imitation.

Today in England and other highly civilized countries of the Old World, the footpath appears in all important highways, even out into the open country. When in England some years ago I walked in the highway from Chester to Hawarden, from Shrewsbury to the ancient Roman town of Wroxeter, from Kenilworth to Leomington and Warwick, and from Hampton Court to Richmond Hill, and to the best of my recollection there was a well-made and well-travelled footpath alongside the carriage road the entire distance.

We are a practical people, and it may be asked "of what use are these footways?" I answer in the language of St. Paul, "much every way." They invite and encourage people to take walks in the open air, and this habit undoubtedly conduces to health and longevity. The promotion of health is now justly regarded as one of the objects of government. Good drainage and universal vaccination are not the only means available for the promotion of the public health. The health of people cannot be improved more surely and in a better way than by educating them into the habit of taking plenty of exercise in the open air. They also teach people how to use their feet and legs. Those who walk much in the open air are not only more robust and healthy in lung and limb than those who do not walk, but they are superior in their carriage and movements in the home and in the street. In form and in motion a person who knows how to walk well is express and admirable, but the action of a person who does not know how to walk is laughable and undignified. In the country towns people walk even less than in the cities, owing no doubt in part to the fact that pedestrians there must either walk in the mud or dust of the carriage way or in the grass and brush by the roadside. Consequently many of our country folks do not know really how to walk, and when they undertake to go afoot they shamble along like their cattle.

When there is some provision made for the accommodation of the footmen in our highways, we may expect to see the art of pedestrianism rise and flourish, not as an exhibition of endurance in a public hall or as a walking mania, but as a noble pastime and the simplest and best mode of travel.

Again, they are the source of great public convenience to all travellers on the highway. The convenience of carriage drivers and wheelmen and the safety of foot passengers requires that footmen should be provided with a place to travel outside the carriage way. It would certainly enhance the comfort and convenience of pedestrians if they were not obliged to travel in the dust and mud of the carriage track. Is there any good reason why a better way should be provided for vehicles and cattle than for pedestrians? As a matter of law footmen have the right to use the carriage road, but as a matter of fact they are compelled to make way for teams and vehicles of all kinds. If foot and carriage passengers were required to travel on separate parts of the highway, the convenience of all travellers would thereby be promoted, and accidents and confusion avoided.

These are some of the reasons why additional footpaths and sidewalks should be constructed and kept in order in our highways, and they are sufficient to show that they are necessary adjuncts of good roads, and should be built where practicable on all the great thoroughfares of the country.

A good road implies a clean and beautiful roadside. And a clean and beautiful roadside means an added attraction to rural life. When one travels over a good road bordered with lovely waysides, the homesteads on either side put on an attractive appearance, the land seems to be fertile, and the cattle in the field look handsome and well cared for. And if there are no fences to interrupt the view or to harbor weeds, brush and rubbish, or to produce snow drifts, the scenery and the utility of the road are thereby improved. In a mild winter like the present one the snow drifts are not a source of annoyance to travel, but in a hard winter the breaking out of the roads is the source of great labor and expense in a country town, and the highway fences and especially the stone walls cause a large part of the

trouble. When a road runs between stone walls the snow drifts thereon are almost sure to be as deep as the height of the walls. I have sometimes thought that it would be a good investment for a rural town to remove the highway walls, at the public expense, and if they should be used as the foundation of good roads their removal would be useful in several ways. Some of them have already disappeared beneath the State roads, and it is to be hoped that they will all be used in the same way during the next decade.

Perhaps the farmer ought not to be expected to improve the road through his land, but he usually owns the fee of the land on the roadside and can cultivate and use the same to his own advantage or detriment, provided he does not thereby incommode public travel, and therefore he should be held responsible in the same degree for the condition and appearance of the roadside by his premises.

In New York and some other States he is required by law to cut all the noxious weeds and brush by his wayside, but here his public spirit is alone the guide of his action in this matter. A good man is usually better than the law, and a good farmer should be better than the law in this respect. He should be willing to do what he reasonably can for the improvement of his wayside, and in any event he should not deface it by using it as a dumping-ground for stone, wood, lumber, rubbish and his worn-out vehicles and farming-implements.

Good roads will help the farmer and the horticulturist in another way. The subject of rural mail delivery is being discussed extensively in all parts of the country, and the experiment is being made in different localities by the national government. The recent report of Perry S. Heath, the first assistant postmaster-general, shows that three hundred and eighty-three free rural delivery routes have been already established in the different States. In this State the system has been introduced in Greenfield, Bernardston, Deerfield, South Deerfield, Orange, Sunderland, Athol and some other places. The government makes it a condition precedent to the establishment of a route that the roads are to be kept in good passable condition for the free

carrier at all seasons of the year. The report shows that in one county in Indiana the farmers were so desirous of securing free mail delivery once a day that they voluntarily incurred an expense of $2,600 in the improvement of a highway to make it meet the requirements of the government. As a result of the introduction of the system, farm land has rapidly increased in value from one to two hundred dollars per acre. And wherever the system has been established more letters have been written and received. Farmers have subscribed for and received more newspapers and magazines, and a great many small articles have been sent through the mails. It has been found that the trouble of a long drive to the post-office had been sufficient to discourage subscription to periodicals and to cause people in remote districts to go without many small articles they now receive by parcel post. This system of rural mail delivery is in an experimental stage in this country; but it has been tried very successfully in Switzerland, Germany, France, Austria and Great Britain, where the free postal carrier passes daily on all important routes.

As soon as we have good roads the system will become permanently established in this country, and some of the isolation of rural life will then disappear. A daily mail delivery would put the farmer in close touch with his friends and with the active life of city and village. The early receipt of the weather reports each day would be of assistance to him in his farming operations, and the daily newspaper would keep him posted on current events.

An electric street railway is not necessarily a part of a good highway, yet it is a fact a railway is more likely to be built over a good road than a poor one. The mileage of street railways has grown with wonderful rapidity in recent years, and without doubt they will ere long be found upon the main thoroughfares of the suburban and country districts. When properly built, located and managed, they will not interfere much with travel on the highway, and they will help to bring people in different localities in close communication with each other. The telephone, and especially the long distance telephone system, which is being

extensively introduced in rural communities, is also helping to do away with the isolation of country life. With good roads, electric street railways, telephones, and free mail delivery, the resident in the country is no longer obliged to lead a solitary life. From the present state of things a new type of social life is being evolved, which embraces the advantages of both city and country life without the disadvantages incident to either one alone. Its distinctive features are the refreshment of nature and the repose of solitude in easy communication with the mart of trade and the civilization of cities. This is where the ideal life is to be found. As the energetic and ambitious people of every community seek the best opportunities within their reach to better their condition in life, they naturally try their chances in those places where the business of the world is being done, and where the most successful prizes in every department of human civilization are being won. Consequently our cities are largely filled up with capable and hard-working men and women who were born and bred in the country, and the most of them live in the hope and expectation that they will be able to spend the evening of their days in the beauty and quietude of rural life. Many a one as he sits by the hearth of his city home sees in imagination the scenes of his childhood, as fond recollection presents them to view; and he longs to live once more amid rural scenes and in the simple and unconventional ways of country folks.

Hitherto these longings have proved to most city people as unsubstantial as dreams, but now there is a chance for these fancies to be turned into realities. The rapid growth of the suburbs of cities and the multiplication of country homes indicate that very many people are availing themselves of the advantages to be found at the present day in rural communities.

And thus good roads are doing much to benefit society at large, for beyond question anything that maintains and improves the stamina of man helps forward the progress of humanity.

Washington declared that the practice of agriculture is the most healthful, most useful, and most noble employment of man. In the hurly-burly of cities people become quick-witted

and proficient in the requirements of artificial society; but the people who live in the free air and sunshine of the country and grow strong in the exercise of farm work, constitute in the long run the bone and sinew of every great nation. The love of the soil has always seemed to be indigenous to every masterful race. The more deeply we search into the annals of ancient history the more clear becomes the fact that agriculture and horticulture were at the bottom of the civilization of those times the same as they are today at the bottom of the enduring forces of society. In the valleys of the Nile and the Euphrates and around the shores of the Mediterranean, where human civilization and enlightenment first reached a high degree of perfection, the cultivation of the soil was the most common and favorite occupation of the people. Men sound in soul and limb are not usually produced in the neighborhood of foul drains and the noise of factories, nor amidst the artificial excitement and turmoil of the crowded street; but rather on the green earth, amidst woods and waters, and in the wholesome occupation of cultivating the soil. When the Romans exchanged the arts of husbandry for the arts of civic life and traded their rural homes for city lots, the decline of their empire began, and continued until it vanished in the darkness of the middle ages. The strenuous life of the farm and garden produces the physical vigor and the mental strength that are characteristic of every great nation.

The courageous farmers of brave little Holland fought and won the battle of liberty of the sixteenth century. The yeomanry of England, under the leadership of Cromwell changed a despotic monarchy into a constitutional government. The embattled farmers of America dared to resist oppression and to establish a republic on these shores. And today we see the farmers of South Africa holding at bay the imperial hosts of the greatest empire of the world.

In asserting the advantages of country life I would not be understood as disparaging the advantages of city and industrial life. There should be no antagonism between city and rural life. Each is essential to the other's highest welfare and pros-

perity. In the two fields every good manual or intellectual worker can find an opportunity for the employment of his powers. Each is an assistant builder and maker of the State. I freely admit that the writers and thinkers, the inventors, the mechanics, the manufacturers, the professional people, and the business men and women in our cities, who are striving to earn an honest living and to be good citizens are instrumental in enlarging the limits of knowledge and trade, and are doing bravely and well their part in the advancement of civilization. But it should not be forgotten that the patient rural workers, who drain marshes, clear the fields, raise the crops, rear families, and establish and maintain pleasant homesteads, are also doing valiantly and well their share of the world's work. They too should be set down among the workers who are the real creators, conquerors and possessors of the earth, and deserve our gratitude and everlasting honor. Good roads will help them to live more comfortably and intelligently, and they will induce people in the cities to join their ranks, where they will find new vigor, better air, and more happiness in close contact with nature as they live on the open bosom of mother earth.

1st March, A. D. 1900.

The Relation of Good Roads to Horticulture and Agriculture.

CONTINUED.

President Hadwen, by way of introducing the discussion of the previous week's topic, said good roads have perhaps enlisted more attention in the last few years than formerly. The State has taken hold to help the towns in building roads and has done good work throughout the State. But experience has proven that the work is very costly. It was supposed that with this assistance from the State, the towns and cities would follow the example and go ahead on their own account to supplement the State highway commission's work. But the contrary tendency has been shown, and the towns evince a tendency to depend on the State to build all the roads.

Footpaths, I think, might be fairly considered as of almost as much importance as the roads themselves. A footpath is seldom heard of in a country road, but the building of footpaths is coming. They are not only convenient, but they help in every way. In Lenox, where you will find as good roads as in any town of the State, the roads well out into the country are accompanied by good footpaths and are well shaded with trees that grow on the land of abutters on the road. Between the roadway and the footpath are plots of grass which are kept well mown and this feature adds greatly to the beauty of the roads.

Good roads are affected by the soil in which they are built. In a soil that is sloping and well underdrained the road is apt to be in good condition on account of settling early in the spring and keeping free from water during the year. Lovell street in Worcester used to be very bad in the winter and spring, until

a drain five feet deep and four wide was dug and partly filled with stone.

The older I grow the less I am inclined to like to see trees planted in the streets. They keep the land from settling in the spring and for other reasons they are objectionable. If evergreens are planted near a road they should be on the north side so that the sun can come in and melt the snow and take the frost out of the ground as quickly as it may when winter passes.

Good roads, when once built, should be maintained by the towns and cities themselves. I think Gov. Boutwell's opinion on this matter is right. I think it would be a good plan to remove any walls that border the roads, unless they be needed to enclose pastures. Walls are a drawback to the appearance of the roadway. If we must have walls let them be cut down to a height of two feet.

Lincoln Holland said the highway law of Massachusetts is largely due to the League of American wheelmen. He spoke of the interest the farmers in some parts of the West are taking in the subject of good roads. They are taking hold of the matter vigorously, and recently had a meeting which was attended by 600 delegates. In the East the movement among the wheelmen is mainly for construction by the State of sidepaths along the highways, many miles of which can be built for the cost of one mile of road. In New York taxes on bicycles support the sidepaths.

David Fiske of Grafton said he thought the old way of repairing the roads was well enough. Grafton used to keep the roads up with an appropriation of $1500 to $1800 and it was understood that a person should go out with a hoe when the water collected on the road and drain it off. Now $4000 is spent yearly on the roads, and they are little better off. Mr. Fiske told of a bad piece of road at the foot of a hill where the ground was spongy in wet weather. This place was repaired by laying a large quantity of large stone three feet deep, covering with smaller stone and a little earth, and there is not a spot in Grafton where the road dries out quicker than that. Mr. Fiske

said he believed the roads ought to follow the pattern of the turtle's back, which was made by the Lord to shed rain.

Arthur J. Marble said good roads interest all classes of people. There is no question but that the horticulturist is as much interested in the subject of good roads as anybody else. I do not think, if our State roads were properly used and properly repaired, that the first cost in 20 or 30 years would be as great as it is under the old system. As you travel the roads you will notice signs put up by the Massachusetts state highway commissioners, requesting those using the road, which has been laid down at a cost of from $9,000 to $12,000 a mile, to use and not abuse the road. Mr. Marble said drivers of heavy teams should show some consideration for the other users of the State roads, and he made an argument against the road-hog. He said it is nature's teaching to use gravel for the surface of the roads, because the water will not affect a gravel road as much as a road made of other material. It is not always possible to run our road through gravel, but we can, after looking to the first principle of road building, the drainage, use the best material at command. I have seen material put on to fill in a road that would make good fertilizer in a corn field, but is hardly the stuff for roads.

I think that it doesn't take much of an engineer to see that the proper way to repair a break in the road is to pick up the hole in the macadam, get down to good hard stuff, put in new material with a good binder, tamp and roll it down, and then you have a good piece of repairing. But instead of that, we see on Worcester streets a cart go along with a load of crushed stone, drawn by a horse which is guided by a human being having more or less intelligence than the horse, it would be hard to tell which. Reaching a break in the road, the alleged human being tosses in a few shovels of crushed stone and the repairing of that spot is finished there and then, leaving the loose stone to be scattered all over the road by the teams passing. Money spent that way on Worcester streets is worse than wasted. If they cannot afford to repair all the breaks properly, they ought

to do fewer and do them well. It seems to me a disgrace that the city of Worcester hasn't got pride enough to continue the State road over Chandler street to connect with the five miles of magnificent road the State has built to Paxton. Chandler street route is better than Pleasant street because it avoids high grades. The Holden road is one of the best instances of the State roads. The Shrewsbury selectmen have been repairing the damage done to their State highway by the storm and I do not see how the town can be prevented from doing the work, for there is a question in my mind if the town cannot be held liable for damages in case of accident on a bad place in the State road.

S. B. Parsons spoke of the roads in Hayti, where he spent a winter. Transportation being by mule, wide roads are not needed and eight feet is wide enough. In 1857 when he crossed the continent to the plains of Nebraska there were few roads and those of poor quality. Mr. Parsons said it was so cold his whole face peeled off and the mercury froze in the thermometer. He was in Chicago when the streets of that city were a mass of deep black mud and half an inch of sand was used on the floors of all the stores, in place of carpets. Now, there isn't a finer piece of road in the State than Michigan avenue. Mr. Parsons told of his efforts to get the road from Worcester to Leicester straightened and said his plan saves half a mile and gives a lighter grade than the present. Mr. Parsons said to straighten the roads and make them wide are two of the prime considerations in road building. He thought 100 feet is none too wide, and if 125 feet, so much the better.

Burton W. Potter said it has been settled by the courts that the towns through which run State roads are not liable for damages due to any defect in those roads, because they are in the care of the State highway commission. Mr. Potter did not agree with Mr. Parsons about straight and wide roads, because he said it is often nearer to go around a hill, here in New England where hills are frequent; and as for width, 18 feet clear of any car tracks is enough for all ordinary purposes in the country.

Mr. Marble spoke of roads through which electric cars run, saying they ought to be wider, so that the travel can pass on both sides of the tracks. The tracks should not be on one side, on account of the danger they are to the people who live on that side of the road, especially if the houses are close to the road. Roads through which the cars run are not as a rule wide enough. They should certainly not be less than five rods.

Mr. Hadwen spoke of the complaints that the people living on Commonwealth avenue in Boston have been making on account of the dust, which in the absence of snow this winter has been a fearful nuisance.

8th March, A. D. 1900.

ESSAY

BY

HOMER P. LEWIS, Principal English High School, Worcester.

Theme:—Horticulture and Education.

The world has never before been so keenly interested in education. All classes and conditions of people are coming to see the importance of it. Today we are accomplishing two things; we are giving a wider education than ever before, and we are getting a larger proportion of the children into the schools. It is certain that, as time goes on, a greater and greater number of years in childhood will be devoted to gaining an education.

In Worcester today about 20 per cent. of all the children that enter school continue through the entire course. President William J. Tucker of Dartmouth college recently prophesied that the time would come when every child would remain in school until he was 20 years of age; and this prophecy is likely to be fulfilled.

As education becomes more general, the average length of the term of life is increasing. Statistics show also that as the time spent in schools increases, the number of criminals tends to decrease. It seems probable that more education will make wars less frequent. Altogether, education is an investment that pays well. The amount of money spent by the United States annually in pensions would pay several times over for public schooling. So that an education that prevented wars would soon more than pay for itself.

The cost of education will surely increase largely, as more pupils are brought into the schools and for a longer period.

But the money that is spent for schools is spent for a necessity, not for a luxury. Education weakens the power of the demagog, purifies politics, makes life better and happier, does away with class legislation, and in many other ways is a blessing. More of it will tend more and more to broaden and deepen culture.

But education must be fitted for the training of all men. Americans must realize that they have to compete with men of all nations, and unless education here keeps pace with that of other countries, America will soon be doing the unskilled labor of the world.

For years to come, the great majority of the children of the land will be educated in the city schools. And it seems as if country bred boys usually distanced in the race of life their competitors city bred, who where educated in the city schools. It cannot be that the country schools are the best. The secret, I think, is that the country boy gets at first hand from living nature many things that the city boy gets from books or not at all. It has been said that the individual has to go through in his development all the experience and history of the race. The ancient man's intimacy with nature was so close that it can not be reduplicated in the experience of the city boy. If this stage of communion with nature is left out of the boy's experience, he has lost something for which he can never make up in later life.

Prof. James of Harvard University says that the country boy brought up in the midst of living nature, is always at home in the world, wherever he is placed. To have been brought up on the farm, to have handled tools, a boat, a gun, means much to the boy; and the experience will develop a sounder mental tissue than can be developed in any other way.

Without this intimate relation to nature in youth, the boy's esthetic sense cannot be properly developed. It has been said that one cannot be a poet, an imaginative writer, an artist, unless in his youth he has been in close contact with nature. City schools tend to teach materialistic views of life. European schools are far ahead of ours in some respects. In two ways

some of them excel: they have established school gardens, and they have excursions into the country under the guidance of some teacher. Of the first I will speak briefly.

In 1869, school gardens were started in Russia. In 1887, the minister of agriculture took measures to encourage them. According to the last reports there were 7521 school gardens in Russia. They have four distinct objects,—hygienic, scientific-economical, general-economical and personal-economical. In Italy, so early as the 14th century, a garden was established where trees and plants from all over the world were cultivated. Sweden has today over 2000 school gardens, and there are many in several of the other European countries. They are coming to America, too.

They cannot make up for the experience the country boy gains, but they go a long way toward doing so. The kindergarten is a step in the same direction. The additional cost should not be taken into account, for all this improved education makes for a higher manhood. And only as education brings man into closer relations with nature can its highest objects be fulfilled.

The paper was followed by a general discussion. Prominent among the speakers was Dr. C. F. Hodge of Clark University, who said, in part:—

John Fiske says that the great distinction between man and the lower animals is the longer period of youth and infancy in man. A prolonged period of plasticity is needed by the human race for its development. The first important epoch in the development of the race came with the domestication of animals, and the second with the domestication of plants. But all or nearly all our domestic animals and plants were domesticated almost before the beginning of history.

Any plan of education that leaves out the study of nature and of living nature seems to me to be fundamentally wrong. We see its results in the army of tramps, and in the machinists skilled in one small part, who when thrown out of work by

improvements in methods, cannot do anything else or learn new methods, and so become tramps or criminals.

The stream is flowing from the country to the city. The first generation comes to the city as skilled laborers, the second becomes unskilled laborers, and the third has usually degenerated into the criminal class. To correct this, in some measure, handwork should be introduced into every grade in the schools.

Dr. Hodge then told of the work he has been doing in introducing nature work of various kinds into the schools, and said that he thought parents and teachers ought to encourage and stimulate this kind of work. If every school pupil in Worcester could be set to work in a small garden of his or her own, raising just what was most needed in the home, either plants for food or flowers to make the home cheerful and bright, Dr. Hodge said that he believed the result would be that the crops, even in actual market values, would fully pay for the entire schooling of the city. At the same time the children would be learning lessons of great value to them, would be getting into touch with nature, and would be gaining a feeling of resourcefulness that would make them better men and women for all time.

REUNION.

14th March, A. D. 1900.

ANNUAL REUNION AND SOCIAL GATHERING.

60th Anniversary of Organization and
58th of Incorporation.

Committee on Winter Meetings and Reunion: Burton W. Potter, Arthur J. Marble, George Calvin Rice, *President* O. B. Hadwen, and *Secretary* Adin A. Hixon.

The company assembled at six o'clock in the Library and Ladies' Parlor. An informal reception was held until six-thirty, then under the guidance of President Hadwen and B. W. Potter, toastmaster for the evening, the company marched to the banquet hall above.

President O. B. Hadwen called upon Rev. Dr. Willard Scott of Piedmont Church to say grace, after which the company sat down and for half an hour was busy with the good things provided by C. S. Yeaw.

Then Mr. Hadwen opened the after-dinner doings by speaking of the Society's custom and its work and aims. He said the reunions were established to bring members of the Society and their friends into closer contact, for that relation between minds which calls into action the spirit of emulation and of love for nature and horticulture which is the object of the Society to promote. Worcester County Society has reached its 60th year, and its prosperity is such that few other societies of this character can boast. Mr. Hadwen extolled the pursuit of horticulture and closed by introducing Burton W. Potter as toastmaster for the evening. Mr. Potter said:—

I desire to emphasize the esthetic and literary side of the question. The spirit of the times in which we live is so material that we are apt to look at things from a utilitarian standpoint.

and it is only by the preaching and practice of those esthetically inclined that ugliness is kept from making the earth a dreary and unhandsome place.

It is with difficulty that the rapacious lumbermen are kept from cutting down every forest. The quarrymen are beginning to blow up the Palisades on the Hudson, and the vendors and promoters of electrical and water power are destroying many beautiful waterfalls by diverting the water into artificial channels. Traders disfigure the highways by hideous advertisements. Our beautiful birds are being exterminated. This is all wrong, and it is all the more wrong because in most cases it is unnecessary. John Ruskin, whose soul abhorred ugliness and admired beauty in all its varied forms, declared that "industry without art is brutality"; and Emerson said "the beautiful rests upon the foundations of the necessary."

Surely it should be one of the purposes of an horticultural society to teach people to make their homesteads beautiful as well as useful, and to love nature and the best literature. Every one who has attended the exhibitions, the lecture courses and the banquets of this Society during the past few years will admit that it has performed its duties in this respect. This banquet is the closing entertainment of the public meetings for this season, and I feel sure that after you have listened to the gentlemen whom I shall call upon to respond to the toasts of the evening you will feel that the last meeting is as good as any of the others.

I have the pleasure of introducing to you Rufus B. Dodge, Mayor of our city and the Farmers' candidate as Representative to Congress.

Mr. Dodge said, I propose to relieve my mind and possibly the minds of others by stating to you that I am not a candidate of the Farmers, nor of anybody else, for Congress. Considering the condition of affairs I deem it a very appropriate time to make that statement now, and I make it seriously. After several good natured jokes the Mayor said,

By the work of this Society the attention of a very large portion of our community is directed into channels which cannot

fail of producing good. It is remarkable that any society without special bonds should have endured for sixty years and after that lapse of time present to the public such correctly organized and well conducted a society as the present, and I heartily congratulate the Society on this anniversary.

Mr. Potter called upon J. W. Stockwell of Sutton, Secretary of the State Board of Agriculture, to speak on "The usefulness of horticulture to the State." He said the Board of Agriculture has been a potent force to lead in the rapid progress of the last fifty years in Massachusetts, not only in the lines of agriculture, but in studying the roads, the roadsides, the garden and in other directions has sought to give pleasure to the taste and comfort to the life of the farmer. This board should continue to be the leader in the new agricultural awakening in New England. The board must teach the farmer that he must investigate for himself and make his own conclusions.

In institutes and colleges the influence of the awakening is felt from Berkshire to the Cape. All these things are the farmer's education today. The farmer must stand the equal of any class, and it is our duty to push forward with the progress of the race.

The desire that the child shall have a good education in preparation for the race of life is a notable change. It is the interest and strength of the State to provide instruction for the people. Rural mail delivery is another matter in which the government should help the farmers, and it ought to be widened and extended on all sides until it becomes the law of the land. Electric railways are a great means of development for the farmer, and to let the congested population of the cities get a breath of fresh country air.

The farmer is getting to believe in himself, and sees that through united effort much can be accomplished for his advancement.

Looking into the future we can see equal taxation for all the people, poor and rich alike, the burdens distributed according to the ability of the people to bear them. We can see the day

when arbitration will be substituted for war. We can see honest industry more prized than gold. The day star has risen, and the mountain tops of the new order of things are already in view. In this new age the Board of Agriculture must have faith in the future and take part in the leadership.

Prof. Samuel T. Maynard of Massachusetts Fruit Growers' Association, spoke of "Utilizing our native shrubs and plants." He hoped the autumn field meeting of the Fruit Growers would be at Amherst so that Worcester Horticultural Society could attend. He said no county has a greater wealth of trees and shrubs for ornamental purposes. No other country has such a tree as the elm. Among the shrubs is the common mountain laurel, which is lacking in many sections and could be grown easily. The common pink azalea is one that is easily planted. Our flowering dogberry is another beautiful shrub.

Hon. Joseph H. Walker said he regretted that the bill to tax the State for the benefit of the towns had failed to pass. He said cities should be taxed for the help of small towns, and that he was ready to pay his share. He gave Mayor Dodge a compliment, and then turned to his subject, which was "What constitutes a good road?" He said:—

What are good roads for persons engaged in heavy teaming? What are good roads for persons using ordinary carriages? What are good roads for persons using bicycles?

(2) What are the interests of the whole people, the State, in roads adapted to each one of the persons in each class mentioned, or to the people of the whole?

(3) "Good roads" is necessarily a relative term. "To the better good is bad."

Our roads in New England are good as we can afford. The State and those advocating the vast expenditure of the State on county roads have lost sight of this fact. They have lost sight of the relations of roads to their uses. They have had no perspective.

They talk about good roads or bad roads with reference to an arbitrary standard; to a road thoroughly impracticable in

average conditions. If a road satisfied all our reasonable wants, if it was to us shelter, clothing and food, including those luxuries that have by use become necessities, then we might devote all our substance to building what they call good roads.

I grant some kind of a road is necessary to and is practically a part of shelter, clothing and food to each of us because we are used to them under civilized conditions. But what the State is now doing in building roads in relation to these practical things must come in the near future to be an oppression instead of an advantage. A small fraction of the State expenditure thus far has any place in practical economics. The building of roads had much better be left to the counties and towns than such extravagant expenditures which must be collected in taxes.

The cost of keeping State roads in repair will be increasingly burdensome to towns, and the State will have to do it and that opens the widest conceivable door for waste if not corruption. Within a few years electric roads will be running everywhere to carry the farmer and his produce.

Make your roads winding for the sake of beauty. There is no beauty in a straight line. We are copying the artificial things of Europe.

What are the equities in the case? A man goes in the country and buys ten acres of land upon which to build a house, for the price of a small house lot, a mile from the city hall. Is the State morally bound to furnish the four people living on these ten acres the same quality and area of road and sidewalk, street cars, etc., expending the same amount of money collected from all the people in taxes that it expends for the two hundred people, more or less, living on ten acres within a mile of the centre of any city. Of course the man who goes into the country to live does so because there are certain advantages that he prizes over and above the disadvantages that he suffers that he would have in the city. Rather than what the State is now doing, it had better pass a law of universal application, agreeing to pay from the State treasury one-eighth of the cost of maintaining all the roads in the State; the counties to bear one-eighth and the towns three-quarters, all repairs to be done upon the approval of a local engi-

neer appointed by a governor, with the right of appeal to the county commissioners.

Bicycle paths can be very easily and cheaply made at the side of all roads. These State roads are not as agreeable to ride upon as a good dirt road.

The State debt has increased already to $14,000,000, more than $2,000,000 of which is for State roads. It has increased more than three-fold in five years. These great expenditures eventually appear in higher taxes, still more depreciation in value of farm properties, making rents higher, prices for food and clothing higher, and thus giving less and less of the comforts and luxuries of life to the wage earners and all other classes.

Warren C. Jewett, Master of the State Grange, spoke of the great work the Patrons of Husbandry are doing in Massachusetts and in the whole country.

Prof. A. A. Brigham of Rhode Island Agricultural College, discussing "The feathered friends of the garden and the farm," made a plea for more nature study, and especially of the birds and domestic fowl.

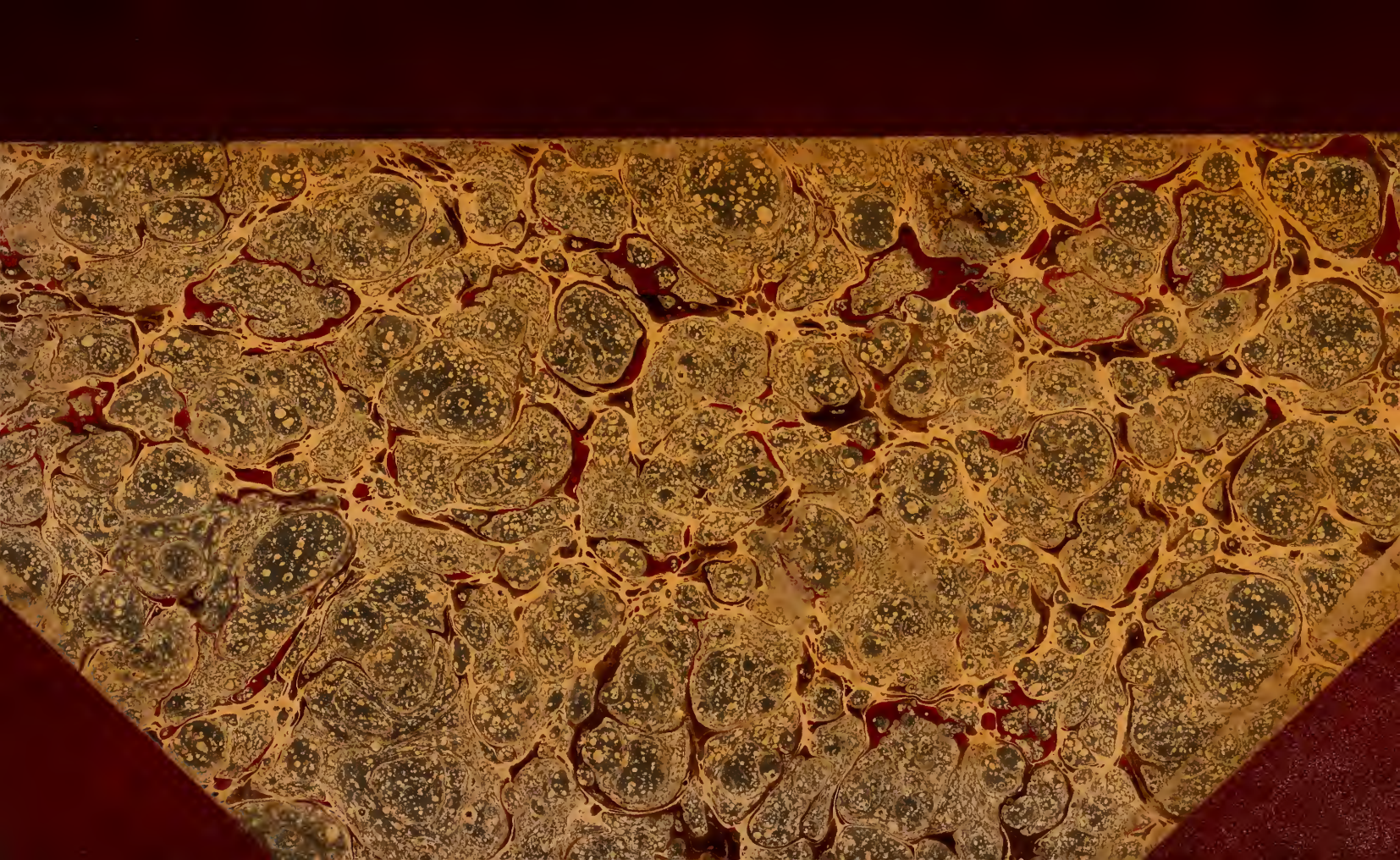
Col. Henry W. Wilson of Boston, a member of the Massachusetts Horticultural Society, said he had never seen in that society such a gathering as the one before him. He pleaded for honesty in agriculture.

This closed the speechmaking, and the party adjourned to the lower hall for dancing to the music of Bicknell's orchestra.

At the guest table in the banquet hall were seated President O. B. Hadwen and wife, Mayor R. B. Dodge, Jr., and wife, Hon. J. H. Walker and wife, Prof. A. A. Brigham, Prof. S. T. Maynard, Warren C. Jewett and wife, J. W. Stockwell of Sutton, Secretary of the State Board of Agriculture, J. C. E. Farnham, President of Rhode Island Agricultural Society, and wife, Col. Henry W. Wilson of Boston, Supt. C. F. Carroll and wife, Rev. Dr. Willard Scott, Hon. Nathaniel Paine, Ex-Mayor Henry A. Marsh and wife, Ex-Mayor F. A. Harrington, Secre-

tary A. A. Hixon, Principal Homer P. Lewis, J. H. Hale, So. Glastonbury, Conn.

Arthur J. Marble was Floor Director and led the grand march with his wife. His aids were: Charles D. Thayer, John B. Bowker, Arthur E. Hartshorn, William I. Allen, E. A. Bartlett, Walter D. Ross, Fred H. Hammond, Henry E. Rich, Charles E. Bond, Allyne W. Hixon.

The platform was decorated with palms and ferns from the Conservatories of Hon. Stephen Salisbury, the banquet tables with flowers and plants contributed by the members of the Society.

The reunion in all respects was one of the pleasantest of the long series of banquets that have marked the close of the winter meetings in successive years.