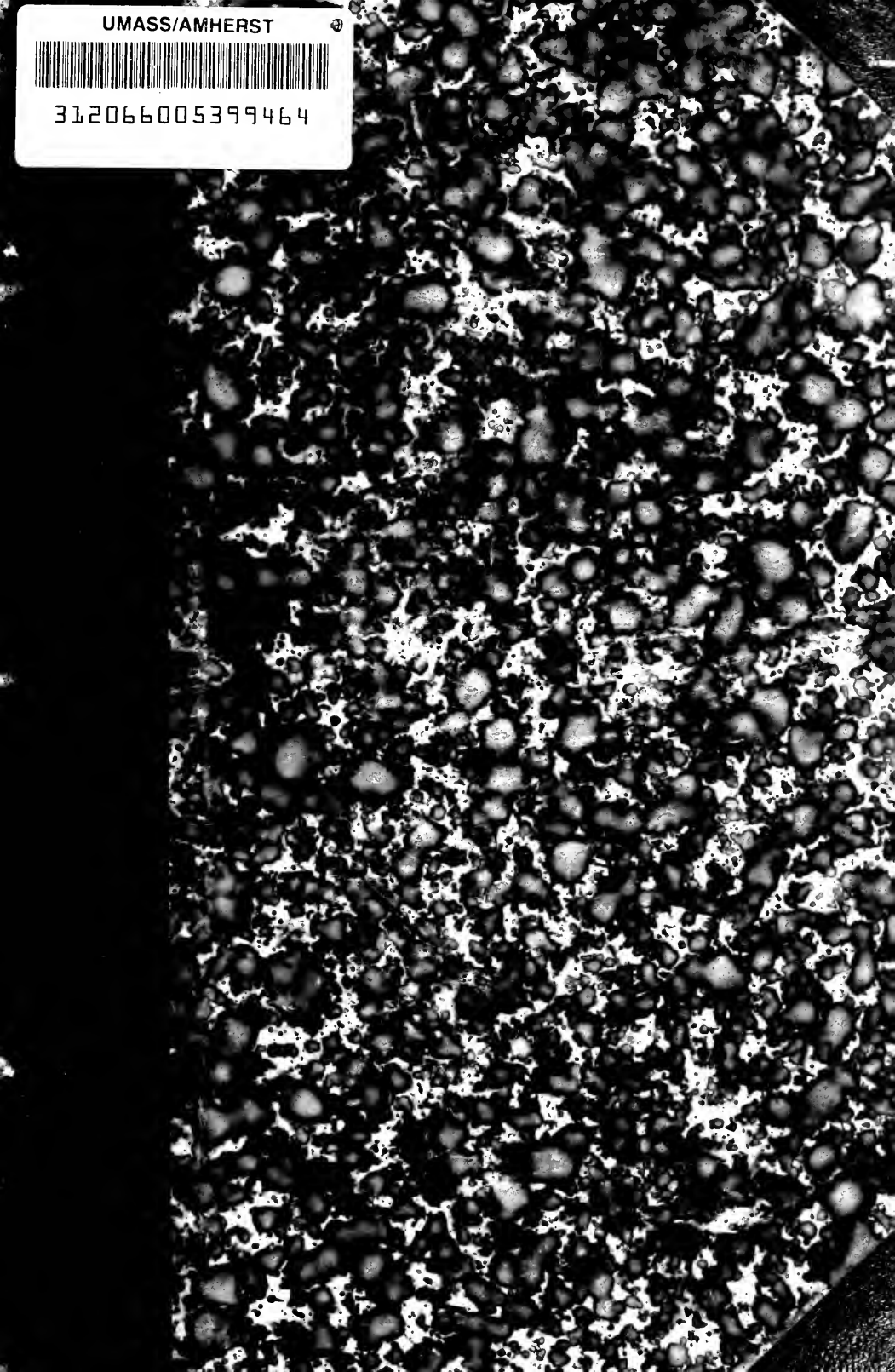

TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1880.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1881.

The Committee on Publication and Discussion take this opportunity to repeat what they have heretofore stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature in the papers and discussions now or before published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly. The award of a prize or gratuity for an Essay is not to be understood as implying that the Committee approve it in every particular, but only that they believe it calculated, *on the whole*, to promote the science or art of Horticulture.

WILLIAM C. STRONG, *Chairman.*

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 3, 1880.

A duly notified stated meeting of the Society was holden at 11 o'clock, and was called to order by William Gray, Jr., the retiring President, who delivered the following address:

ADDRESS OF PRESIDENT WILLIAM GRAY, JR.

Ladies and Gentlemen,—The past two years have been uneventful ones in the history of the Society; with the exception of the celebration of its Semi-Centennial Anniversary by appropriate exercises here on the twelfth of September last, I recall nothing of marked importance that has happened.

Among the deaths have been those of Dr. Jacob Bigelow, the oldest member of the Society, its first Corresponding Secretary, and the projector of Mount Auburn Cemetery; of James Cruickshanks, whom most of us here to-day must remember with such kindly feelings; of John M. Merrick; of Cheever Newhall, one of the founders of the Society, and its first Treasurer; of his kinsman Josiah Newhall, one of the original members of the Society, and active and interested in all its affairs until a short time before his death, and of William R. Austin, for many years Treasurer.

The discussions have taken a wide range, and have been interesting and instructive as usual.

The exhibitions, although the amounts offered for prizes have necessarily been much reduced, have more than sustained the reputation of the Society. In some of them, notably the Rose

Exhibitions, there has been a marked advance over previous years in the number of exhibitors, and the interest shown by our members and the public generally. Five of the meetings for discussion in the last two years have been devoted to this subject. The silver cups offered for prizes at the Rose Show (the cost being met by private subscription) heightened the interest and excited a spirit of emulation among the growers, which will undoubtedly show its results in the coming years. Six of the cups were awarded outright; the seventh, the Challenge Cup, so called, must be won for three consecutive years before becoming the property of any one person, and I venture to predict that many years will elapse before it finds its final resting place. It is hoped and expected that these prizes will be continued annually hereafter.

I would call attention to the report of the Library Committee in regard "to the uses for which the Library Rooms are employed." They say, "While the propriety of leasing the Society's halls is not disputed, it is submitted that the rooms containing one of the most valuable horticultural and botanical libraries in the world should not be turned into a general headquarters for the managers of the miscellaneous exhibitions which visit Boston; who, by their loud conversation and passing to and fro, cause a confusion which is not in harmony with the objects of the Society, and which especially interferes with the legitimate uses of the library."

While agreeing with every word of the above it must be remembered that we have been passing through a season of great business depression, that we have been forced to reduce our expenditures to the lowest possible point, and to increase our income by every means that offered, and that, as much as some of the uses to which our building has been put, may be deprecated, there was no alternative.

Times are now changing, and real estate, always the last to recover, must soon feel the effect of the quickened activity in all other interests. I hope we shall presently be able to make such additions to our building as are needed to accommodate the library, and to give proper rooms for our Secretary, our committees, and for the use of those who engage our halls. This is for future consideration; but I think it would be true economy, and a good investment for the Society, to put its building in thorough repair at once.

In relinquishing the office held for the last two years I wish to

express my regret that business duties have so often prevented my being present at the meetings here, and to assure you that my absence has been from no want of interest in the Society.

And now I take pleasure in welcoming to his new office a gentleman of whom it has been well said that he is "unsurpassed by any member of our Society in his enthusiasm for horticulture."

The President elect, Hon. Francis B. Hayes, then delivered his inaugural address as follows:

Address of President Francis B. Hayes.

Ladies and Gentlemen of the Massachusetts Horticultural Society:

We have entered this year upon the second half-century of the Society's existence, the close of the first half having been appropriately commemorated by an interesting address delivered before you by a venerable ex-president, who was associated with the founders of the institution.

We have seen the young plant springing from seed sown by the lovers of the beautiful in nature, and nurtured by their fostering care, developing into a stately tree, which, under the same tender and watchful attention has towered into gigantic proportions, and from it offshoots have sprung which have beautified and benefited the entire country. The organization which originated with Lowell, Dearborn, Cook, Russell, and a few others, has grown in fifty years to a society of a thousand members, having financial resources in invested property larger in amount than any other horticultural society in the world. It was the first to establish in this country a "Garden of the Dead," and the example of Mount Auburn has created numerous rural cemeteries throughout our country. The National Pomological Society is also the offspring of this Society. The excellent flower, fruit, and vegetable markets of Boston, in many respects preëminent over all others in the country, owe much of their distinction to this Society. It has largely promoted the ornamentation of the many beautiful rural residences about us. It has stimulated the study of plants throughout the country, and the eminence of our University at Cambridge, with its valuable gardens and arboretum, as a place of botanical study, under the guidance of the distinguished botanists, Gray, Goodale, and Sargent, is not a little owing to the influence of this Society.

The past work and influence of our Society are referred to with

justifiable pride, and with sentiments of profound gratitude, as the results of the labors and contributions of its members, many of whom have gone to their reward, though there are some who are still spared to us, and who are active in sustaining, promoting, and extending the usefulness of our institution.

In recalling what has been accomplished by our predecessors, we are forcibly reminded of what our duty is if we would faithfully discharge the trusts imposed upon us as their successors. We must not be satisfied with what has been thus far accomplished, but we must be incited by their example to emulate our fathers in good works. We must not do our work as routine labor, following in the track which our predecessors made; for if we do, we shall keep in the ruts, and accomplish nothing, or but little. But we must constantly endeavor to improve and enlarge the sphere of our labor, and strive to do our work better than it has been done heretofore. As our predecessors by their original ideas and personal efforts improved upon the past, so we must step forward boldly, and, by our studious investigations and scientific and practical industry, work out something new and useful in our several specialties. We have much yet to do to place ourselves in the first rank, in all respects, with other horticultural societies of the world. Though we have considerable investments in property, yet other societies realize by assessments, contributions, and other methods, larger sums of money to expend annually for horticultural objects than we do. The duty, therefore, is imposed upon us to watch carefully our financial concerns. We have still a considerable debt to be paid before we can hold our real estate unencumbered. It is not a heavy encumbrance, considering the value of the property, yet it is a debt to be provided for before the Society can enjoy all the income of its estate. We must continue vigilantly to see that we derive all the income we can fairly from our property, and we must scrutinize all expenditures. We must cultivate a wise economy, avoiding always that excessive frugality which would be highly injurious to our interests. We must employ the best men we can obtain for the administration of our affairs, and compensate them fairly; and they must be held to strict accountability. We must remember that our Society was formed "for the purpose of encouraging and improving the science and practice of horticulture," and we must use the means to accomplish the object, and, therefore, we should not apply too much of our income to the good object

even of discharging our debts before their maturity, if we are thereby deprived of proper means to forward the interests of our Society by stimulating the culture of plants; but we must watchfully guard against increasing our present debts. We should see that prizes, as large in amount as we can afford, are offered to induce the highest art in the cultivation and public exhibition of flowers, fruits, and vegetables. The reports of your committees show that the Society during the past year has recognized, by their awards of prizes and gratuities, exhibitions of the products of the soil to a considerable extent; yet it has been a matter of surprise to many, that with so little stimulus of pecuniary advantage to exhibitors during the past year, the exhibitions have been so satisfactory as they have been. It shows that the pure love of horticultural pursuits has governed those who have made these exhibitions so beautiful.

It is a matter of doubt whether, however limited the resources of the Society may be, the money which is appropriated for exhibitions should not be more largely bestowed in prizes rather than so much in gratuities, as has been lately done. It is well for the committees to have some money for gratuities, to meet special cases, yet the offering of prizes tends to induce larger and better exhibitions of productions, as many would exhibit in the laudable hope of obtaining a prize which recognizes superiority, and be indifferent to a gratuity, which might be awarded to mediocrity.

Valuable contributions to horticultural science have been made through the discussions and essays which have been promoted by the Society's meetings during the past few years. It is to be hoped that a larger number of our members will be interested to attend these meetings than heretofore, and contribute the results of their experience and studies for the general good.

Our Library is a very important source of information upon horticultural subjects. It is rich in valuable books, carefully selected, which few horticultural students could otherwise obtain. We should continue to use the means within our control to enlarge its usefulness, and supply it with works of real scientific and lasting value, rather than ephemeral and cheap horticultural literature.

Our Library Room is somewhat contracted for the various uses to which it is appropriated. We have scarcely room in our elegant building, outside of our halls, for our largely increasing library, and for the necessary accommodation of the officers of the Society,

and of the members generally. It is, therefore, necessary that until additional rooms are provided, the Society should enforce regulations as to the use of the library room, so as to give our members a quiet and pleasant resort for pursuing their investigations, with as little interruption as possible. Though our building is large, yet the wants of our Society are increasing with its growth, and additional room is required for our purposes, or an increase of our funds to allow us to dispense with the necessity of letting our halls to obtain the requisite means for defraying the annual expenses of the Society. May we not hope that some liberal benefactor, recognizing the great good which the Society renders the public, will supply the want which now hampers our means of usefulness?

There is a vast deal for the Society to do to place it on the elevated plane it should occupy. We must not be satisfied with what has been attained; if we do, we shall decline and decay, while sister societies will outstrip us in the course. We should observe how vigorously horticultural investigations are carried on and promoted by many societies and individuals in Europe, and we can gain much by imitating them in looking to new and extended fields of usefulness which we have not yet entered. The weakness of senility, and of satisfaction in our present attainments and acquisitions, must not enfeeble our Society. We must preserve in it perpetual youth and energy that we may advance all the time to new achievements. Spasmodic exertion will be of no permanent advantage, but earnest, steady, constant, and quiet effort on the part of all for improvement in our loved science and art will accomplish the desired object. Each of us should try to do one thing in the best manner possible, and not, by attempting too much, fail in all. It is of great importance to be able to produce the best flower, fruit, or vegetable of a kind. It would be exceedingly valuable to the world to learn how that best specimen is grown. But little knowledge is requisite to grow many sorts and kinds in an ordinary manner, and such knowledge is of small value to any one.

Let, then, each one try to do at least one thing well, and by so doing he will best forward the interests of our association and the welfare of the community. And I would desire the same principle and rule of action to govern in all matters affecting our relations with the Society. If one be a cultivator, let him produce something superior to all others of the kind. If he be fond of studious investigation, let him turn his attention to scientific researches into the

operations of nature. Should his specialty be a love of books, let him do what he can to improve our library, and make it a great storehouse of information for horticultural students. If his skill be in finance, let him do all that is possible to preserve and augment the financial resources of our Society, that it may have the larger means of usefulness.

While we gratefully recognize what those with generous hearts and competent means have done for the Society by their large benevolence; and also what the past officers and prominent managers of the financial and business affairs of the Society have accomplished by their constant and gratuitous labor, we must not forget that the success of the Society mainly depends upon those who are the practical workers, and who contribute the results of their labor to the beautiful exhibitions which the Society is constantly making for the delight and profit of the community. Let me again express my appreciation of the work of those who have made our exhibitions so attractive as they have been; and let us trust that by the united exertions of all its members the Society will continue to be respected and honored for what it does to beautify and adorn our homes, and enrich and improve the community.

Ladies and Gentlemen,—When I remember the able and eminent men who have been my predecessors in the high office to which you have elected me, all of whom have been distinguished horticulturists, it seems almost presumptuous in me to enter upon the responsible duties of presiding officer of this institution; yet as you have unanimously called me to the position, I will enter upon its duties cheered by the hope that, with your assistance, I may, perhaps, be able to be of some advantage to the Society to which I dedicate my best services.

President Hayes's address was received with much interest and satisfaction, which was expressed by applause at the close.

On motion of Charles M. Hovey, seconded by M. H. Merriam, it was *Voted*, That the thanks of the Society be presented to Presidents Gray and Hayes for their interesting addresses, and that they be referred to the Committee on Publication.

The following appropriations, recommended by the Executive Committee, on the 1st of November, 1879, and laid over until this meeting, were unanimously voted,—

For Prizes, ...	$3,050 00
For the Library Committee, for the purchase of magazines and newspapers, binding of books and incidental expenses of the Committtee, ...	200 00
For the Committee on Publication and Discussion,	150 00

Ex-President Gray reported from the Executive Committee the following votes, which were passed:

Voted, To recommend to the Society that, until the finances of the Society will warrant it, no plate or other testimonials be presented to outgoing officials.

Voted, To recommend to the Society that the income of the Whitcomb fund of $500, to the amount of $30, be appropriated for prizes for vegetables in addition to the amount already appropriated for the year 1880, and that the number of prizes, time of award, and other details be at the discretion of the Committee on Vegetables; the prizes to be known as the Whitcomb Prizes.

Ex-President Gray also reported from the Executive Committee the appointment of E. W. Buswell as Treasurer of the Society for the year 1880, and Robert Manning as Secretary.

The Secretary read a letter from Francis H. Appleton, announcing the decease of Josiah Newhall, one of the original members of the Society.

On motion of C. M. Hovey, Mr. Hovey, Mr. Appleton and John B. Moore were appointed a Committee to prepare resolutions in memory of Gen. Newhall.

William C. Strong, Chairman of the Committee on Discussion, announced that the series of meetings for discussion the present season would be commenced on Saturday next, after the adjournment of the business meeting, when Joseph Tailby would speak on the cultivation of the *Cypripedium* and *Eucharis*, and a discussion would follow; and that on Saturday, the 17th, a Prize Essay, by Samuel Parsons, Jr., of Flushing, N. Y., on the Most Promising New Hardy Ornamental Trees and Shrubs, and their Tasteful and Effective Arrangement, would be read and followed by a discussion.

Further time was granted to the Treasurer to prepare his Annual Report.

Adjourned to Saturday, January 10.

BUSINESS MEETING.

SATURDAY, January 10, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President HAYES in the Chair.

E. W. Buswell, Treasurer, read his Annual Report, including the Report of the Finance Committee, which was accepted and referred to the Committee on Publication.

Charles M. Hovey, Chairman of the Committee appointed at the last meeting to report resolutions in memory of Gen. Josiah Newhall, presented the following:

Resolved, That in preparing a last tribute of respect to Gen. Josiah Newhall, who died at Lynnfield on the 26th of December, 1879, at the advanced age of nearly eighty-six years, and offering expressions of the loss the Society sustains in being deprived of his usefulness, his example, and his genial company, we must also recall his earlier days and hearty efforts, when a firm foundation was being laid for this now prosperous Society. Gen. Newhall was from its first enthusiatically and actively interested in all that pertained to its foundation, prosperity, and exhibitions. In horticulture and agriculture he was ambitious to originate and improve various kinds of fruits, and was always an earnest worker in everything relating to the culture of the soil.

He was Chairman of the School Committee of Lynnfield for twenty-two years, and was the first Representative from the town; he served in the war of 1812, and subsequently in the State militia; under President Jackson he held an office in the Boston Custom House; he was much interested in astronomy, and kept a very accurate record of the weather and rainfall.

He was most highly esteemed and respected by all who knew him, and in his death we lose a member whose heart was deeply in the work for which this Society was formed, and one whose actions were always directed to its welfare.

We shall remember him for his love of honor and integrity, and his interest in all that was for the good of the community, and this Society in particular.

Resolved, That these resolutions be entered on our records, and that a copy be sent to the children of the deceased, with the assur-

rance of our warmest sympathy with them in their sad bereavement.

Mr. Hovey in presenting the resolutions, spoke of Gen. Newhall as an old friend of his own and one whom he had known for many years. He was always, when possible, constant at the meetings of the Society, and had attended them until very lately. He was a man of strict integrity, and a representative of a generation now past, who gave their aid to the Society at a time when it was very much needed. Mr. Hovey concluded with the hope that the younger members of the Society would emulate the example of our departed friend.

John G. Barker spoke of Gen. Newhall as a near neighbor, and referred particularly to an address delivered by him at the last fair of the Essex Agricultural Society, of which he was one of the oldest members,—an address so filled with the fruit of ripe years and rich experience that listening to it was a pleasure to be long remembered. Mr. Barker commended the example of Gen. Newhall to the younger members of the Society as worthy of their imitation.

The resolutions were unanimously adopted, and the Society adjourned to Saturday, February 7.

MEETING FOR DISCUSSION.

Immediately after the adjournment of the business meeting, a meeting for discussion was held. The subject was

The Cultivation of the Cypripedium and Eucharis.

This was introduced by Joseph Tailby, who said, that in the last edition of Williams's "Orchid Growers' Manual," the *Cypripedium insigne* is described as having a solitary flower. A gentleman in England had a large plant in a pan which bore one spike with two flowers, and this was thought by the "Gardener's Chronicle," a very extraordinary instance. Mr. Tailby said that he noticed under each flower a little pouch, containing what he supposed to be a rudimentary flower, to be developed by cultivation, and he succeeded in the attempt to develop it. Some thought the production of two flowers on a spike was owing to the plant being of a different variety, but he was satisfied that it was due entirely to

cultivation. A small plant which Mr. Tailby had owned for thirteen months, was exhibited, showing the secondary pouches; and a small plant from M. H. Merriam, also showing the secondary pouches; but these small plants had not strength to develop the second flowers. Some have supposed the speaker had some secret method of developing the second flower, but he said that he was willing to tell all he knew. People buy plants of nurserymen who give to all the same directions for cultivation, and some succeed and others do not. The small plant exhibited was dwarfer from growing nearer the light. He had tried loam and fibry peat to grow them in, but thought the best method was to fill the pots one-third full of crocks, and the remainder with crocks, sphagnum, and coarse sand. Some in peat are not satisfactory. The pot must be well drained. They want a great deal of water, which should be given regularly. He used weak liquid manure, but it should not be made with ammonia or guano, and should be as clear as wine, or else it would clog the soil. The plants should be kept near the glass, but as cool as possible. The one shown was subjected to five degrees of frost in November. It might be well to put the plants out-doors in summer if there is plenty of shade and help. Of one hundred and eighty spikes, every one showed a second (rudimentary) flower. When a plant is once brought up to the point of producing two flowers on a spike, it should be kept up. This species is so easily cultivated that no attention has been given to it; indeed, it will bear any amount of ill treatment, but it is worth growing well. The flowers bring twenty-five dollars per hundred; a spike with two flowers on it is worth fifty cents. He had had nineteen spikes with two flowers each, and a hundred and eighty-two with one flower each. The plant shown by Mr. Merriam was probably grown in a dark place.

Mr. Merriam said that Mr. Tailby was right in supposing that his plant had not had sufficient light.

Charles M. Hovey asked what was the advantage of having two flowers on one stalk.

Mr. Tailby replied that the commercial value was quite important. It might be only a matter of taste, but the ladies and florists preferred two. Besides this, however, he liked to make progress in cultivation.

William C. Strong thought it an interesting fact in vegetable physiology that a plant could be brought by high feeding to develop

flowers from dormant buds, as had been done by Mr. Tailby with the *Cypripedium*.

Leander Wetherell asked whether all plants could not be developed by high feeding.

Mr. Strong replied that high feeding was apt to produce luxuriant growth, and did not always, as in this case, cause abundant flowering.

Mr. Tailby said that the condition of his plant was not wholly due to high feeding, — it must have good ventilation.

John G. Barker asked whether a plant could not be made to produce a still greater number of flowers, say four or five, on one stem.

Mr. Tailby said that two years ago he had a plant which showed a tendency to bear two flowers on a stem. It produced nine spikes, all having two flowers each, and he was satisfied that all could be made to, for all have the rudimentary flower. He could not say whether they could be made to produce four or five flowers on a stem, but thought they might.

Mr. Hovey said that Mr. Tailby's remarks were very interesting, and that if the plant in question continued to produce two flowers on a stem it would be of greater interest than at present, as showing that the habit had become fixed. Other plants sometimes produce an unusual number of flowers on a stem; in 1878 we had a spike of *Lilium auratum* shown with one hundred and forty flowers; in 1879 the plant produced four stems, with twenty-five flowers on each. If it had gone on to produce a spike of two hundred flowers, it would have shown that the habit was becoming fixed. We want to know whether this habit in Mr. Tailby's *Cypripedium* is fixed. We must consider it abnormal, until we have evidence that it is permanent. The speaker, however, liked a single flower on a stem best. Roses sometimes produce one flower above another, but when they do so it is only an interesting curiosity. Mr. Tailby's remarks showed that he had studied the nature of the plant carefully. The roots of the *Cypripedium* are large and fleshy, and want an open soil.

Mr. Tailby said that the lily referred to by Mr. Hovey was a monstrosity, while the two flowered spikes of *Cypripedium* were produced by cultivation. Cranston says that the superimposed roses are caused by gross feeding. Boule de Neige, especially, is apt to be affected in this way. All *Cypripediums* have the rudimentary

bud, and only need cultivation to cause it to flower. The English cultivators have never noticed this fact. The plant which now bears two flowers on a spike will go back if not properly cared for.

Mr. Barker said that the *Cypripedium insigne* is valuable for window or conservatory culture. He had had a plant flowering in a window since the 15th of December.

Mr. Tailby agreed with Mr. Barker as to the value of the *Cypripedium* for window culture. *C. insigne* is the best for this purpose. It will keep in flower two months.

Mr. Strong thought the case of the *Cypripedium* was not at all like that of the *Lilium auratum*. The former was a development of a dormant bud, while the latter was a monstrosity. It should be understood that the *Cypripedium* is capable of such development.

Mr. Hovey thought the cases of the *Cypripedium* and the lily were somewhat analogous, but if the plant exhibited produces two flowers on a stem next year we may conclude that it is due to high cultivation.

Mr. Merriam expressed his admiration of Mr. Tailby's plain, straightforward remarks, and his confidence that his statement and theory were correct. He thought the case of the *Cypripedium* differed entirely from that of the *Lilium auratum*. The undeveloped bud of the *Cypripedium* contains the promise and the prophecy of flowers.

James Comley said that the plant shown by Mr. Merriam had three or four times produced stems with two flowers on each, but it had since been neglected and had partly died. The part now dead produced a stalk with two flowers. He had seen *Cypripediums* produce two flowers on a stalk for twenty years; they have done so in England. Mr. Harris, Mr. Hunnewell's gardener, has a plant with two flowers on a stem. The question is whether this effect is caused by cultivation. He thought it could be produced by taking off the suckers from the plant, but he would rather have twenty stems with a single flower on each than two stems with two flowers each, and would rather have a greater number of spikes than have triplets. It is not the nature of the *Cypripedium* to grow in sphagnum; he would give them loam and brick rubbish. They are generally kept too dry. All orchids will take a portion of liquid manure.

Mr. Tailby said that if he had but one spike with two flowers

he could get two dollars for it. He could get a dollar for a Dog rose or a Sweet Brier when he could get but five cents for a Bon Silene. He objected to Mr. Comley's plan of removing the suckers from the *Cypripedium*. He would not say that two flowers on a stalk are handsomer than one, but they will bring more money.

Mr. Hovey said that *Cypripedium Sedeni* has produced seven flowers on a spike. Other species have two or three flowers. *C. insigne* is considered hardy in England. The speaker had plants in a house where the thermometer fell to 26°; one which stood in a current of air was blackened; the others were not injured. He thought it could be kept over winter in a frame. Many of the new and high-priced species are not as beautiful as this. He still thought that there was very great analogy between the monstrous inflorescence of *Lilium auratum* and the production of two flowers on a stock by the *Cypripedium insigne*.

James O'Brien said that Mr. Tailby's skill in cultivation was conceded, and that he himself had fifty plants and every year had some spikes with two flowers. He had one very fine one at this time. He would be very glad to have the point of permanence settled.

Mr. Tailby said that in ten pans he had nineteen stalks with two perfect flowers on each, and one with a third rudimentary flower.

Mr. O'Brien said that the production of two flowers on a stem in his plants was not owing to high cultivation; the roots were growing over the sides of the pot.

Mr. Tailby said that this indicated a plant in good condition.

Mr. O'Brien added that the flowers were in demand before Christmas, and all were cut except the stem now having two flowers, which might for this reason have received extra nutriment.

The discussion of the *Cypripedium* ceased here, and the *Eucharis Amazonica* was taken up. Mr. Tailby, who had been very successful in cultivating it, said that in England three crops of flowers are raised in a year; but he believed that when this is done the second crop comes from bulbs which are maturing while the first are flowering. He did not think the same bulbs had strength to flower again in three months or even twice a year. In a pan with eighteen bulbs he got eighty-seven flowers, and he had exhibited one spike of ten flowers. The bulbs must be ripened; they require to be matured as much as a hyacinth or any other bulb. They

must have time to ripen the foliage, and must be dried off for this purpose, but the bulbs must not be allowed to shrivel. After the flower buds have once started they must be encouraged and not be allowed to receive any check. He has them in three inches depth of soil; they want coarse stuff as *Cypripediums* do, and much water. Bottom heat is not essential, but it is an advantage. They can be grown in a greenhouse where the temperature runs down to 38°.

Mr. Strong said that he saw the *Eucharis* growing over hot-water pipes in Mr. Tailby's house, and thought it benefited by bottom heat, but now he was inclined to doubt whether it was.

William H. Spooner, Chairman of the Flower Committee, called attention to a cyclamen shown by James O'Brien.

Mr. O'Brien said that it had a double flower. He often got plants which produced double flowers, but they seldom maintain that character; this one, however, has done so for four or five years.

Mr. Tailby said the only way to perpetuate it would be to fertilize the flowers and save seed from them.

Mr. O'Brien said that it made seed very sparingly; he did not think the double character any additional beauty.

Mr. Hovey agreed with Mr. O'Brien that the doubling was no improvement. With all the advance that we have made in the cultivation of the cyclamen we still fall far behind European cultivators. He visited an exhibition in England where one grower had a hundred and ninety pots, including the *C. giganteum*, a very large flowered variety. The plants are neglected here; they should be made a special object of culture, as is done by three or four men in England, who have several thousand plants each.

Mr. Tailby thought this double cyclamen had a commercial value; an English seedsman would pay a high price for the seed of it.

The Chairman of the Committee on Discussion announced for the next Saturday a Prize Essay, by Samuel Parsons, Jr., of Flushing, N. Y., on the Most Promising New Hardy Ornamental Trees and Shrubs, and their Tasteful and Effective Arrangement, to be followed by a discussion.

MEETING FOR DISCUSSION.

SATURDAY, January 17, 1880.

A meeting for discussion was holden at 11 o'clock, WILLIAM C. STRONG, Chairman of the Committee on Publication and Discussion, presiding. The following Prize Essay, by Samuel Parsons, Jr., of Flushing, N. Y., was read by the author.

THE MOST PROMISING, NEW, HARDY, ORNAMENTAL TREES AND SHRUBS, AND THEIR TASTEFUL AND EFFECTIVE ARRANGEMENT.

To explain the meaning and fair application of such words as promising, new, and hardy, and to suggest a tasteful and effective arrangement of a series of ornamental plants that may properly be included in such a definition, I cannot perhaps do better than to describe to you a choice and well planted lawn. The picture, as a whole, will then explain itself as well as the manifold relations of various parts. I desire, indeed, to make evident the unity and just proportion of the scene, and, at the same time, to dwell duly on the individual traits of each plant. These plants cannot fail to gain peculiar interest, when you come, as it were, to associate with them and study sympathetically their wants, caprices, and many lovely qualities.

Here is the picture:—A simple cottage, low, rambling, and picturesque, enclosed by boundaries of shrubbery on every side. Fifty feet east and west extend the side lawns, and down to the north slopes gradually the main stretch of turf, till it ends in the winding banks of a clear and rapid stream. A part of the bank is somewhat marshy, and here the opportunity has been taken to plant sundry interesting herbaceous plants or wild flowers that affect such spots. Willows of various kinds droop over the water, and birches strike vigorous roots into moist and congenial soil. Alders wave and cypresses stand elegant and tall in similar spots, until we come to solid dry land in the north-west corner. Here are masses of Norway spruces, alternated with white pines, and here and there an Austrian pine. This evergreen grouping extends nearly up to the house. The shelter thus afforded is therefore most complete, forming protection and back-ground alike. This portion of the framework of the picture also serves to bring out harmoniously and effectively, sundry beautiful groups and single

specimens of the finer evergreens. As we approach the house, these evergreens become smaller and more dwarf, until, immediately about the building, we find plants that grow only two feet, perhaps, in ten or fifteen years. Back of the house and at the sides, grow deciduous shrubs, large and effective, bordering the entire remaining portion of the domain. These are varied at intervals, by the loftier heads of deciduous trees,—maples, elms, and the like, the trunks of which are entirely hidden by the thickly and naturally disposed shrubbery. On the corners, especially, are planted large elms, intended to mark and define more completely the boundaries of the lawn. Just within the enclosure grow a few choice, medium sized trees, standing isolated, as it were, but everywhere else we meet mere shrubs or dwarf trees. As a rule, moreover, we find evergreens and deciduous plants each grouped by themselves.

Yet with all this variety of trees, the lawn proper, or greensward, remains very prominent, its broad, well cultured stretches being on the whole the most noteworthy part of the design.

Wandering amid such scenes as I have just hastily sketched to you, let us take sundry notes, giving our attention chiefly to new, hardy, ornamental trees and shrubs, and their tasteful and effective arrangement. As we turn into the paths immediately about the house, the first objects that attract special attention, are various small shrubs, or rather miniature trees. We are struck by them, because, though they have evidently a family likeness, they are yet as diverse in appearance as it is possible for plants to be. They stand either singly in some prominent position, or in clusters of three or five on curves or intersections of paths. There must be at least twenty of them and scarcely two of them are alike. Inspection of their labels tells us they are Japanese maples, chiefly but not entirely of the *polymorphum* species. Rare curiosities indeed! We doubt if you have often seen their like before. Yet they have been known to explorers and plant collectors fifteen, twenty, and even, in some cases, fifty years. Experts have long recognized how remarkably their shapes vary, from the more common type of maple foliage to the extreme of cut-leaved forms, and how their lace-like tissues are dyed with purple and gold in June. They have been exhibited and sold in Europe, in a limited way, for at least fifteen years, but, strange to say, in face of the simple facts, there has existed a wide-spread conviction that their

hardiness is defective. Hence we read of them as pot-grown, a condition that must always prevent the full, free development of their beauty. Some one must have finally, and perhaps accidentally, left them unprotected in the open ground during winter, for we may now find them growing in the most exposed positions, apparently as hardy as any maple. The only weakness of which they now continue to be accused, is a tendency to burn and fade under the stress of exceptionally hot summer days. But as there are very few established plants in this country, perhaps we may find that as they become more permanently settled in the soil, even this weakness will disappear. I know such to have been the case in Thomas Hogg's collection, which includes the specimens which have been longest planted in this country. They were imported somewhere about 1862 and 1864. Any summer day one may see in this collection, all kinds of Japanese maples standing entirely uninjured by sun or cold. The fact is, that most, if not all, Japanese maples, set out up to this date, have been imported from Japan and were accustomed to very different conditions in their own country. They have also, in all probability, been hurt to the core by the voyage, and, in addition to this, have been weakened for our purposes by the Japanese system of ultra dwarfing, so that it is not strange if they seem to have a poor chance in America. I feel confident that American born plants, when we have them well established on our lawns, will do better; but, even as it is, scarcely one summer in five will specially burn their leaves, and as they grow older the danger decreases. It must be remembered, moreover, that no variegated-leaved plants stand the heat of July and August without injury. They may not, in many instances, burn, but they will fade. A natural query also arises, as to why Japanese maples are so rare. They have been long recognized as gems among hard-wooded plants, and, for house interior decoration only, would have been well worth extended propagation. This question may be fairly asked, but the answer thereto is not easy to find. A practical system of propagation has, for some reason, remained until recently undiscovered. Layering was found to be a slow and unsatisfactory process, and seed would not, of course, reproduce with any certainty the different varieties. American and European maples were employed in vain, as stocks to receive Japanese scions, because the junction made by grafting, though apparently successful for a time, invariably failed within a year. Finally, after the

manner in which such discoveries usually happen, several propagators in both Europe and America, about the same time, came to the conclusion that they must use the parent stock, *Acer polymorphum*, for all varieties of its own offspring. It was all very simple, but why did no one think of it sooner? Thanks to this discovery we may now hope in a few years to see Japanese maples more plentiful throughout the country. Nevertheless, we need not hope that their propagation will ever be easy. It would be contrary to the nature of the plant.

Let us look at a few of the varieties that may strike us as specially noteworthy. First, and perhaps the most popular, comes *Acer polymorphum sanguineum*. Its main attraction is the full rich red or purple that dyes the leaf; otherwise it is simply solid and vigorous for an extremely dwarf tree. The *sanguineum* variety performs very much the same ornamental part among shrubs as the purple beech does among trees, with less shining lustre and more richness of hue. Surely I could not give it higher praise. Nearly related in appearance, and yet very distinct from *sanguineum*, is *Acer polymorphum atropurpureum*. The tints of its leaves are darker, and perhaps duller than those of *sanguineum*, but it has a taller, more picturesque habit, and is better and more artistically suited for growing in pots or tall vases for interior decoration. We have yet to avail ourselves of the extreme aptitude these Japanese maples have for room and window decoration during February, March, and April. They burst into leaf, as it were, in a moment, and exhibit a refined and exquisite effect in keeping with the decorations of the most dainty boudoir. In mentioning these varieties of Japanese maples, I must not forget the original species, *polymorphum*, which grows better than many of its varieties, and is only less exquisite than the best of its offspring. Indeed, though the prevailing color of its leaves is green, it often throws out sports of pink, yellow, and white, thus illustrating afresh its erratic tendency,—that tendency which has enabled Japanese cultivators to display their horticultural ingenuity in perpetuating so many attractive varieties by skilful grafting. There are white variegated forms of *polymorphum*, like *albo-variegatum*, and a beautiful crimped-leaved kind, delicately shaded and tipped with rose. It has more or less of the white and yellow color of the last. Then there is *versicolor*, of larger habit, and sharper, longer leaves, white and rose tipped. *Reticulatum* has light green, trans-

lucent leaves, crossed with light colored lines, which give it a distinctly veined appearance. *Polymorphum* offers us weeping forms as well as dwarf forms, but most curious of all, are two or three cut-leaved kinds. The green *palmatifidum* is the simplest variety of the cut-leaved type. Not remarkable for peculiar color, the leaves are cut into a semblance of coarse lace; curious, weeping, and graceful. No more delicate weeping tree exists than these *palmatifidum* and kindred forms. After a slow growth, for a dozen years, perhaps, these miniature trees begin to droop in long, sweeping folds. When the green becomes purple, as it does in *palmatifidum atropurpureum*, *dissectum atropurpureum*, or *ornatum*, which are one and the same varieties (for dire confusion in catalogue names exists here), the effect is still more charming. In *pinnatifidum* and *pinnatifidum atropurpureum*, the effect is even more unique, because, though quite as cut-leaved, its divisions are yet simpler and more elegant. *Dissectum foliis roseo-pictis* is fairly shred-like in its fine divisions, and in addition has a variegation consisting of pink, yellow, white, and green. Strange to say, the apparently delicate, narrow-leaved forms like *roseo-pictis*, endure burning suns better than the broad-leaved kinds.

All Japanese maples heretofore mentioned, have been of the *polymorphum* species, and, indeed, *polymorphum* maples, with two or three exceptions, are practically the only Japanese maples we are able to obtain for the lawn. One of these I shall note now, and another when I consider new and rare deciduous trees. The maple I now propose to examine is *Acer Japonicum* — medium sized, with vigorous, splendid leaves. To me these leaves seem only surpassed among Japanese maples by those of its golden variety. *Japonicum* has bright green leaves, ridged and crinkled, and of solid texture. A special beauty of this variety lies in its flowers. They are long, pendent, and pink; more striking in every way than those of the scarlet maple. Still, perhaps the most charming of all Japanese maples is *Acer Japonicum aureum*. Although a variety of *Acer Japonicum*, it is very different. The leaves are rounder, and the lobes of the leaves smaller and less deeply cut. Nevertheless they are almost large for a medium sized tree, and in color most delightful. Rich, pure gold mingles here with faint suffusions of green, thus producing the most subtile and delicate variations of color on the same leaf. I should like to speak still farther of Japanese maples, but other new ornamental plants

must have their turn now. Let us give our attention, therefore, to a brilliant cluster of flowers growing on a curve of one of the paths near the house; a path that winds down gently towards the gate. It looks, indeed, charming, thus situated on a slope of green, for it is a group of *Azalea mollis*. You may reasonably ask why we speak of azaleas, even hardy azaleas, for, as a class, they are by no means new or rare, although, perhaps, excelled by no hardy shrub for exquisite color and other goodly qualities. *Azalea mollis*, however, is hardly an azalea in the ordinary sense of the term. It is, moreover, Japanese, and of recent introduction, as introductions go, for a new plant really ought to have ten or fifteen years to obtain a positive foothold on American lawns. The flowers are the chief attraction of *Azalea mollis*, as, indeed, they are of all azaleas. At first glance they seem much like those of the hardy or Ghent azalea, only very much larger and more showy. On closer inspection, however, we recognize also a considerable resemblance to the rhododendron. The clusters are nearly as large as those of that plant, and the corollas are not unlike it in shape. But the color and texture of the flower mark it an azalea in the fullest sense. The color, indeed, is much deeper and richer, but it shows the same shades—salmon, pink, orange, and scarlet. The question, of course, presents itself, Why do not these azaleas take the place of all other hardy azaleas? Simply, because nothing choice in nature can have its place exactly filled by any thing else. These *Azalea mollis*, you will notice, are arranged in a group by themselves, and in a somewhat sheltered, well-drained spot. They are liable, because they bloom very early, to have their blossoms destroyed by late frosts. While young, too, the wood is sometimes winter-killed. The ordinary hardy azalea, on the other hand, is surpassed by few shrubs in capacity to endure various exposures. Specimens of *Azalea mollis* are planted together *en masse*, because of their showy appearance. It would be hardly fair to group them around the outskirts of rhododendron beds in the manner so effectively employed with hardy or Ghent azaleas.

Seeking out more especially Japanese deciduous shrubs for the moment, we note, clustered in a retired corner, a little group of *Daphne Genkwa*. Although by no means striking plants, they have a refined, quiet beauty that grows on one. They are slender and upright growing, with numerous long, downy twigs which, in early spring before the leaves appear, are garnished with violet-colored, tubular, dainty-

looking flowers rather less than an inch long. This plant seldom attains a height of more than three feet. *Eleagnus longipes*, the Japan oleaster, growing near, is another striking and curious plant. It is of small size, with spreading, somewhat irregular branches, and leaves bright green above and silvery-white beneath, studded with brown scales. The small, yellowish flowers are produced in great profusion on long stalks, and are succeeded by berries of an oblong shape and deep, transparent, orange-brown color. These berries are likewise speckled with brownish scales. I cannot help remarking on another *Eleagnus* on this lawn, *E. argentea*. It is not only comparatively new, but very choice and rare. Silvery-leaved plants are always interesting, and this is perhaps the most silvery-leaved plant known to our lawns. The leaves are of good size and rather long, and the plant has generally a somewhat straggling habit, but the sheen of its silver is always unsurpassed. It seems to be very hardy, too, which gives an additional reason for noticing it here.

But what is this creamy-white cluster of flowers growing like those of a deutzia? The odor is delicate and delightful. Large, roundish leaves, however, distinctly mark its difference from the deutzia. Altogether it is a very decided acquisition, bearing the rather difficult name, *Pterostyrax hispidum*. *Styrax Japonica* has deutzia-like leaves, but very different flowers. It is less striking in appearance than *Pterostyrax hispidum*. Here, also, is an actual *Deutzia*, with leaves marbled with silver, and a new Japan quince, remarkable for unusually large, rosy-pink flowers, double the size of the familiar form of *Pirus Japonica*. Another of these Japan quinces also attracts us with its tri-colored pink, white, and green foliage.

Little globes of curled and crisp dark green leaves, minute and very compact, may be seen here and there about the house, covered with small red flowers, that bloom off and on all summer. It is *Spiræa crispifolia*, doubtless a variety of *S. callosa*. Very dwarf and free flowering, it is one of the most useful shrubs of this character. We note also *Rhodotypos kerrioides*, a very pretty shrub, something like a small blackberry bush in general appearance, but more delicate, and covered with numerous small white flowers, shaped not unlike those of an althea. Somewhat prominent, also, is *Diervilla* (*Weigela ?*) *Lavallee*, with chocolate-colored flowers, blooming freely a second time during the latter part of the summer.

I must not forget to call your attention to a larger shrub on this part of the lawn, which you will doubtless recognize as a sumach. It is much larger and more tree-like than our common form, and quite spreading. It is *Rhus Osbecki*, a Japanese sumach of much rarity. The leaves of this sumach have the wing peculiar in a greater or less degree to the midrib of that plant, so enlarged as to be very striking, especially during the intensely scarlet glow this plant takes on in fall. No color can be finer than the autumn tints of *Rhus Osbecki*. The flower in June is, moreover, very effective.

Among the Asiatic shrubs, I may very properly here call attention to certain new magnolias. They occupy, in two cases at least, the transition point between trees and shrubs, but they are more properly shrubs, since their peculiar beauty demands that their branches be preserved close to the ground, which gives them, in everything but size, the effect of a true shrub. The really shrub-like magnolia is *Magnolia Halleana* or *stellata*, the most compact and slow-growing of its race. It has been introduced from Japan for many years, but has not, until recently, been received with anything like the attention it deserves. The leaves are dark green, somewhat small for a magnolia, and given to disposing themselves in very picturesque masses. If it is the most dwarf of Asiatic magnolias, it is also the hardiest and most readily transplanted. Its prime charm consists in its flowers. They are more than creamy white, they are snow-white, with a peculiar brilliance of texture; but, more than all, they are delicately fragrant, — more fragrant than any other hardy magnolia, except the one I am about to point out to you. When open, these flowers, which come earlier than the bloom of any other magnolia, and before the leaves, remind one of the star-shaped clematis, but in their loveliest form, half opened, their graceful curves are like those of white water-lilies. The earliness and beauty of this flower, and the sudden manner in which it bursts into bloom, indicate a capacity for producing early forced flowers of the finest quality. I only wonder florists have not recognized its value in this respect. *Magnolia Halleana* occupies the outskirts of an irregular group of different magnolias, situated near the boundaries, and not far from the house. Back of it, and very conspicuously placed, is the latest attraction from Japan, *Magnolia parviflora*. It reminds one of a large-growing *Magnolia glauca*, our common sweet-scented swamp species. The leaves are rich and massive, and the general habit

as vigorous as any of the Asiatic magnolias, but the flowers, which bloom in June, are simply charming. Beautiful also, exceedingly, in a curving cream-colored cup of petals, the stamens and pistils unite into a crimson elongated mass that contrasts most effectively with the surrounding white. Yet, attractive as all these qualities are, the odor surpasses them altogether. Doubtless, you know the half-hardy southern *Magnolia fuscata*. If you do, you may conceive something of the degree of sweetness of *Magnolia parviflora*. From a plant standing near the far end of a greenhouse one hundred feet long, the spicy odor impresses you immediately on opening the door. A large *Magnolia parviflora* has proved perfectly hardy for several years, and good judges declare it a great acquisition.

On the other hand, if it were not for *Magnolia parviflora*, we should consider the somewhat longer known *M. hypoleuca*, unrivalled in its way. This magnolia, of which there is a fine specimen on our lawn, is as hardy and vigorous as *M. parviflora*. The leaves are much finer and longer, being over a foot in length, silvery underneath, with a bright red midrib and leaf stem. Creamy white and delightfully sweet-scented, *M. hypoleuca* blooms as late as *M. parviflora*, and apparently as sparsely. But, sparsely or not, it is very pleasant to see such attractive flowers in June, having parted regretfully from our beautiful Chinese magnolia blossoms more than a month before. The silvery green and red of the leaves of *M. hypoleuca* vary somewhat in beauty, but are always rich and effective. One specially noteworthy point about many of the plants we have been considering, is their peculiar adaptation to places of the restricted dimensions of, say half an acre, or even less, a consideration which, I contend, is destined to carry more and more weight as the capacity for ornamentation possessed by these small places becomes better understood.

I should have called your attention to a beautiful single white althea, the form of its flower is so simple and elegant; but we must pass on to larger trees. Among valuable hardy plants are the members of the entire genus of maples. Here, amid fringing shrubs, or standing singly on their outskirts, we find still other interesting kinds. *Acer colchicum rubrum* recalls the Japanese maples, for it, too, is a Japanese maple, and a very peculiar one. It grows and looks somewhat like *Acer Pennsylvanicum*, a species that seems almost identical, at least in appearance, with more than

one species in Asia and Japan. *Acer colchicum rubrum* is properly *Acer Mono*, or *lætum*, and grafts only fairly on the Norway maple, the stock generally used. It is, indeed, difficult to propagate at best, and, therefore, rare. The charm of the tree lies in its red twigs and rich red foliage, in June, and also in its red second growth in late summer and early fall. Much of the tree, even in early summer, remains green, so that the numerous brilliant red leaves create a beautiful variegated effect. The green leaves have angular lobes and a neat, elegant appearance that would alone render the tree very attractive. The position this tree occupies on our lawn is somewhat sheltered, for it is not always and everywhere entirely hardy. Several curious varieties, or closely allied forms of this maple come to us also from Japan. Some of them are mottled with white in odd fashion, while others bear pure snow-white leaves, which, unlike the white-leaved *Acer Negundo*, endure summer heat and sun perfectly well. Unfortunately, these forms are still more difficult than *Acer colchicum rubrum* to propagate, and less hardy.

I should notice, also here, one or two new and rare Norway maples, that are very charming on the lawn, and perfectly hardy, after the manner of all Norway maples. *Acer platanoides Lorbergii*, is deeply cut as to its leaves, with the young growth of a more or less reddish color. *Acer platanoides Schweidleri* is the finest of these Norway maples, which are well represented on this lawn. The large, striking leaves take on the most brilliant red in June, and in August and September the second growth glows richly amid the general green of the foliage. These trees are specially valuable, because they belong to the Norway maple species, in most senses our best hardy shade tree. Passing out on the main lawn, we note a single tree of very distinguished appearance, quite distinct from anything we have observed before. It is the golden catalpa. One of our most effective lawn trees is the catalpa. Broad, massive foliage, shadowy and most grand, characterizes the effect of this tree. It retains its foliage, moreover, late in fall, grows rapidly, and, by its large, prominent appearance, impresses the eye from the most distant part of the lawn. Conceive all this effective foliage then painted with solid golden tints, and you have the golden catalpa (*Catalpa syringæfolia aurea*), which we note here on the lawn in question. The young growth is, of course, most prominent, and in fall the richness of coloring is often very striking amid the wide-spread dulness of incipient leaf decay. Long clus-

ters of white, fragrant flowers are also fine in August, which is very late for sweet-scented flowers.

Aralia Japonica, of which there is a fine specimen, is comparatively new, and very interesting. It is a low tree, with a spreading, umbrella-like head. The leaves are very large, curiously or deeply divided, and surmount branches and trunk of thorny or prickly habit. Altogether, it is a strange-looking tree, and very hardy. It bears in autumn long, waving clusters of brownish purple fruit, or seed-vessels, which characterize the tree. The flower is quite as effective as that of the common *Aralia spinosa*, or devil's walking-stick. It also affects soil of moderate fertility, having, doubtless, the failing of the family, viz.: throwing up shoots or suckers from the roots. Deep, rich soil would, in all probability, aggravate this failing.

On a gentle slope near one side of the lawn, where the effect of a weeping tree may be most happily presented, is a new pendulous Japan cherry. We have long had small weeping cherries, round-headed, neat, and very symmetrical; well fitted to perform an ornamental part on the lawn similar to that accomplished by the Portugal laurel, which is not hardy in our portion of the United States. The weeping cherry on this lawn is a different affair. It is tall, vigorous, and in every way like a common fruit-bearing cherry, except that it weeps. And it literally does weep. No deciduous tree, if we except the beech, does its weeping in more persistent, charming, and original fashion than this cherry. The flowers, moreover, in early spring are very attractive, fairly covering the tree with small pink blossoms. Combining, as it does, so many ornamental qualities with a hardy and easily propagated nature, it forms, unquestionably, a lawn plant of much value. But come with me down by the stream; there are some interesting plants in that region. First, let me call your attention to a weeping deciduous cypress (*Taxodium distichum pendulum*). It is quite new, although in most ways a simple southern cypress, with all that cypress's soft, feathery grace and elegant outline. The brownish red bark and erect stem of the southern cypress are also there, but added to these qualities is the great charm of weeping curves, persistent and distinctly drooping. This cypress may be now and then a little eccentric in habit, but usually curves soberly downward. Like its parent type, it enjoys moist soil—indeed detests dry sandy quarters. In this section of the lawn there are several interesting

alders, the natural haunts of which are moist places. *Alnus firma*, and one or two other Japanese alders are specially interesting, with their green, ball-like seed-vessels and shining, elegant foliage at seasons. I like to note these alders, for their presence here shows regard for a genus of plants too much neglected. Here, also, grow several interesting Japanese willows, *Salix Sieboldii*, and a curious dwarf, *Salix sericea pendula*.

The ashes are seemingly out of favor with some lawn planters, yet we ought to see them more freely used; for prejudice in this case is entirely unfounded. They are hardy and not more prone to disease than other ornamental species, and they are all possessed of beauty as varied even as maples or elms. Many will recall the round, rich, symmetrical elegance of the walnut-leaved ash (*Fraxinus juglandifolia*), as well as the beauty of the more common American and European ashes (*F. Americana* and *F. excelsior*). Come with me, however, and look at this aucuba-leaved ash (*F. excelsior aucubœfolia*). What a rich mottled gold dyes the leaf, and how attractive the roundish outline of its shining foliage. Near by is *Fraxinus punctata*, still more beautifully shaded with gold. But these comparatively old variegated ashes are almost thrown into the shade by the curious tints and forms of two or three new varieties. Note this *Fraxinus excelsior concavœfolia*, with its white and rosy tints, marking strongly the young growth alike in summer and in fall, until, at a distance, one readily fancies the tree crowned with rich hued flowers. The entire young leaf, in this case, is more or less mottled with white and rose. Another ash, to which I want to draw attention, has light green, attractive foliage, but it is specially noteworthy for the curiously perfect curves of its downward drooping branches and leaves. This is *Fraxinus scolopendrifolia*. Then there is the Japan ash (*F. elonza Japonica*), distinguishable by its small leaves and drooping, graceful form. The Japan silver-leaved ash (*F. Japonica argentea*), is likewise represented by a good specimen. It is one of the best and most constant of variegated-leaved trees. The leaves are broadly edged with silvery white, which sometimes suffuses the entire leaf. There is also a golden and equally attractive variety of this Japan ash. The cut-leaved form of the ash is found in *Fraxinus Japonica serratifolia*, and we have the dwarf form of ashes illustrated by *F. excelsior atrovirens*, a curious tree of almost diminutive habit, with dark-green curled leaves fairly hugging the stem. I like to

dwell on the ashes, for they are neglected unjustly. My notes are very brief, and do but scant justice to the many fine ashes on this lawn.

Notwithstanding the beauty of the ashes, however, we turn with pleasant anticipations to look more closely at the oaks. Most original, perhaps, in form, of all species of hardy or ornamental trees, as well as enduring and grand, we are all familiar with many effective kinds. Here we find, however, certain strange new forms. The planter seems to have appreciated the magnificent qualities of the oaks as lawn trees, and gathered together a notable collection of them. I will note briefly some of the most interesting.

Quercus Pannonica, the Hungarian oak, one of the finest of its species, is a grand tree that is not exactly new, but is certainly very rare. It has great, shining, deep-lobed leaves, and grows vigorously; a quality not always specially peculiar to the oak. This reminds me of a form of the pyramidal oak, a member of this group, *Quercus pyramidalis cucullata*. The pyramidal oak is, perhaps, the most rapid growing of oaks, and as it also has curious leaves, curled down at the edges, you will readily perceive that in this variety we have found an interesting tree. Cut-leaved forms attain their extreme development among oaks in *Quercus heterophylla dissecta*. The leaves are literally cut into mere shreds. There are several variegated-leaved varieties of oaks. The most familiar we notice on this lawn is *Quercus pedunculata argentea*, a beautiful and striking variety, with its dark-green leaves variegated along the edges with silver. Passing from this simpler type, we notice about us various more complex developments of a similar coloring, which, indeed, needs only a little warming in tint to turn it into gold. *Quercus tricolor variegata* is more broadly and curiously streaked and spotted with red and white, becoming in fall tri-colored in appearance. Among the more warmly tinted leaves we have *Quercus aureo-viridis*, with leaves broadly striped with yellow between the ribs. This variety, though fine, only leads us suitably to a specimen of the true golden oak, *Quercus concordia*, in some senses the noblest deciduous tree of our lawn. The peculiarity of this oak is, that it lacks the deep golden tint in June,—in fact it is distinctly greenish-gold, but in August a full, broad, rich gold suffuses the entire leaf, and, as the tree grows well for an oak, it is easy to conceive, even without seeing a specimen, what a grand effect it must make. This color seems to grow richer and richer

as summer wanes and autumn appears. It does not, in fact, gain much richness after August, but by the increasing contrast between the surrounding fading tints and its fresh, healthy yellow, it becomes more and more prominent. The deepest color is shown by the purple oak, *Quercus nigricans*. This species is more permanently brownish-violet throughout the summer, but, unfortunately, it is not very hardy in the climate of New York and northward. The weeping oak is represented on this lawn by a grand specimen. Many have doubtless heard of the excellence of this variety. But it is hardly likely that many are conversant with its peculiarly rapid growth for an oak. I have seen a young weeping oak grow five feet and over in one season, and that in poor soil. One curious fact about these golden variegated and weeping oaks is, that they belong very generally to European species. Possibly the variations of American kinds have not been noted with the same care by propagators, for the simple reason that, until recently, far too little consideration has been accorded American lawn planting material.

Grand as the oaks are, we turn to the elms as capable of furnishing us lawn planting of equal, if different, importance. Here we have Roessel's golden elm, *Ulmus campestris aurea*, a small elm, as elms go, but bearing leaves solidly and beautifully suffused with yellow. It grows, of course, near the house, in accordance with its smaller habit. *Ulmus viminalis* is another slow growing elm. It is, however, distinct and elegant, with small rough leaves and numerous smooth, slender, twig-like branches, which are even somewhat pendulous, like those of the famous cut-leaved birch. *Ulmus campestris Berardi* is a beautiful miniature elm, of slender growth and pyramidal habit, with deeply and delicately cut foliage. There is also a weeping variety of much rarity, called *Ulmus rugosa pendula*, with large rough leaves. The Siberian elm, *Ulmus parviflora*, is an old elm, perhaps, but quite new on our lawns. On the lawn in question, there is a fine specimen, with upright habit and dark, slightly curled, small leaves, which remain green far into winter. I know, indeed, of hardly one true deciduous tree that stays green as late.

A great contrast with these smaller forms is afforded in the same genus by *Ulmus fulva pendula*. It stands in a prominent position, where it can be seen against a background of sky without injuring valuable views from the house. The position is selected, of course, opposite a slight break in the boundary of foliage. The leaves of

this slippery elm are not unlike those of the common American elm, except that they are far more remarkably weeping and persistent in hanging on the branches late in fall. American elms, we know, are somewhat remarkable for their dull fading tints, which appear, during some seasons, as early as mid-August. The special characteristic after all, of this weeping elm, is the way it throws about great, far-reaching branches, which curve out and downward in a very grand fashion. Such a vigorous, erratic growth, however, needs curbing, and the pruning knife must be used at times remorselessly. I have to designate just what weeping elm I mean, for there is another well-known and choice variety, of European origin, and equally pendulous habit, called the Camperdown weeping elm, which is by no means rapid growing.

Among the lindens, our attention is attracted by a curious variegated kind, which shows leaves spotted and streaked with yellowish-white, often to the total exclusion of green. And we must not forget to notice, down near the stream, a fine specimen of the purple-leaved birch. It is one of the best among new acquisitions of lawn planting material. The general habit is that of a somewhat dwarf-growing birch, but the color is brownish red, copper color, or more truly a deep rich purple. Good purple-leaved varieties of any tree are not common. Indeed, we may not hope soon to gain anything of equal value with the purple beech, but the birch is in itself so fine that it is a great thing to discover a purple-leaved variety of that tree.

I feel that I have only touched on the many new and valuable deciduous trees on the lawn, but I have accorded them more space than the evergreens, because I believe deciduous trees are, in the main, best suited to our lawns in America. Intense, though short-lived, heat and sudden changes do not favor the growth of evergreens in the same degree as the more equable climate of Europe. We find, however, on this lawn, a very choice collection of new evergreens. Among the spruces we note several, and chief among those the large-leaved hemlock (*Abies Canadensis macrophylla*), the weeping hemlock (*Abies Canadensis pendula Sargentii*), and the blue spruce of the Rocky Mountains (*Picea pungens*). The hemlocks of this trio are peculiarly suited to small places, but the last named spruce is of larger size. Breadth and depth of masses and color, statuesque form, and curious yew-like habit, characterize the broad-leaved hemlock. It has little of the ordinary appearance of the hemlock about it, and is more hardy

under the peculiar conditions that sometimes affect the common hemlock. It was a seedling discovered in Flushing a few years since, yet it has already achieved favorable recognition from the best judges of lawn planting material. If the broad-leaved hemlock is somewhat stern and masculine in its outline, the weeping hemlock is essentially feminine in its graceful curves and fountain-like sprays of green. Many ordinary hemlocks take on this weeping form in early youth, but it soon passes away with increasing years. With Sargent's weeping hemlock, however, this beautiful habit is absolutely permanent on all specimens grown from grafts of that tree. Henry Winthrop Sargent discovered this weeping hemlock about twenty years ago, near his place, at Fishkill on the Hudson, and moved by his enthusiasm and appreciation of choice ornamental trees, entrusted it for propagation to the distinguished expert, J. R. Trumpy. Turning from this queenly tree, we note the rich grandeur of the third member of our trio of distinguished evergreens. *Picea pungens* is said to be very grand in its natural home of the Rocky Mountains, but its young and more carefully cultured growth on the lawn is without question more beautiful and charming. It is, moreover, the bluest of evergreens, and extremely hardy and vigorous growing withal.

I should, perhaps, note in passing a fine large *Abies excelsa elata*, a very singular variety of Norway spruce, originating in Flushing. It grows strongly and throws out long branches of grotesque form. One might fancy it, by a little stretch of the imagination, a fit substitute for *Araucaria imbricata*, which many wish to grow on their lawns in America, but cannot.

The next group of evergreens we notice is Japanese, and clustered variously in the same section of the lawn. *Abies polita*, the tiger-tail spruce, is one of the finest and most valuable of the Japanese conifers. It is rich and very characteristic in its form. The yellow-barked branches extend out stiff and straight, and the glossy, bright green, stiff-pointed leaves are as sharp as, and not unlike, the spines of a hedgehog. The curious appearance of the ends of the young growth, or half-bursting leaf buds, doubtless suggested the name of tiger-tail spruce. *Abies polita* grows slowly, and, therefore, belongs to the class of evergreens specially fitted for small places. But this little cluster of evergreens close by is even better fitted for such work. They are Japanese junipers and very hardy. Their elegant forms and rich tints would, indeed, render them

distinguished any where. One is silvery, at least on a portion of its leaves; another is almost solid gold, and another, *Juniperus aurea variegata*, has its leaves simply tipped with gold in the daintiest fashion imaginable.

Let us look at these two Japanese pines that show so richly, even at a little distance. One is *Pinus densiflora*, with bright green leaves, long and very effective. This tree grows very rapidly, soon requiring the application of the pruning knife. In coloring and general habit, it is, perhaps, the best of Japanese pines, except *Pinus Massoniana*, which only surpasses it in a yellowish tint that generally pervades the leaves. But the *Pinus Massoniana*, par excellence, is the golden-leaved form of that species. It is bright gold, that seems to gain a touch of deeper gold as you pause to look at it. This peculiar effect is greatly enhanced by the fact that it has two leaves only in a sheath, and these leaves are so clustered on the end of the branches as to spread in every direction. It was this peculiarity that gave rise to the name sun-ray pine. But the noteworthy habit of this pine is its late variegation. In June, while in full growth, it is rather greenish golden than golden, but, all through the summer, its yellow grows brighter, until, in September, it makes a very striking object amid the fading leaves of fall. It makes, in fact, a worthy companion for the golden oak, *Quercus concordia*, which, you will remember, has the same peculiarity. It should be also noted, that the brightness of the sun-ray pine remains uninjured during winter, and it never burns in summer, a quality that other so-called golden pines have sadly needed. The bright yellow of the sun-ray pine is confined in a peculiar manner to about two-thirds of the leaf. Beginning at the base, first comes gold, then an equal amount of green, and then again as much gold at the tip. The dividing lines between these colors are marked with singular distinctness, thus giving the utmost delicacy and finish to the variegation. *Pinus Massoniana variegata* is on the lawn in question, but it is, nevertheless, very rare and hardly to be obtained anywhere.

We come now to the *Retinosporas*, or Japan cypresses; the choicest, I was about to say, of all evergreens; certainly the choicest, as a class, of all recently introduced evergreens. To Robert Fortune, the great English collector of plants in Japan, we owe, probably, the real introduction of the leading species of *Retinosporas*, namely: *R. plumosa aurea*, *R. pisifera*, and *R. obtusa*,

and a greater benefit could hardly have been done the lawn planter than by the introduction of these evergreens. They are hardy, of slow growth, and of most varied beauty in individual specimens, the latter being a quality greatly wanting among some evergreens commonly used throughout the country, arbor vitæs, for instance. The *Retinosporas* graft readily on the *Thujas* or arbor-vitæs, and bear a certain resemblance to them, but the resemblance only that can exist between a beautiful plant and one much less attractive. Let us look at a group of the new and rare *Retinosporas*, although unfortunately all are comparatively rare on our lawns. In asking you to look first at *R. filicoides*, I am selecting one of the very choicest and most curious green species or varieties. If it were not for a peculiarly thick, curled border along the leaf of this variety, it might be readily taken while young for an evergreen fern. It is a spreading plant of slow growth and great hardiness. Indeed, I might say, once for all, that the *Retinosporas* are of unexcelled hardiness, both winter and summer, and that their variegations are all permanent. Can a higher character be given to any other evergreen?

There are two distinct kinds of weeping *Retinosporas*, namely, a beautiful, fern-like, pendulous form of *R. obtusa*, originating in Flushing, and an extravagantly attenuated form imported recently from Japan through Thomas Hogg. The long thread-like leaves of this variety fall directly down and curve about the stem in swaying, meagre masses, which suggest that in this plant the extreme of the weeping form among evergreens has been reached. Almost as curious as this is another introduction of Mr. Hogg, *R. filifera aurea*. We have known *R. filifera* for some time as a rare tree, with tesselated, shaggy masses of green thread-like foliage, but Mr. Hogg's new variety offers the same strange mass of foliage, only in this case it is turned into gold—broad, solid, permanent gold. While I am pointing out the golden *Retinosporas*, which are veritable sunbeams amid other evergreens, let me call your attention to *R. obtusa aurea*, one of the best and most distinct of all variegated forms. It is free-growing, with a beautiful combination of gold color intermixed with glossy, rich green all over the plant. Although not exactly a new plant, I am constrained to call your passing attention to *R. obtusa nana*, one of the very best of dwarf evergreens—a dense, flat tuft of glossy, deep green spray—a cushion or ball of evergreen foliage that will hardly

grow two feet in ten years. The golden form of *R. obtusa nana* is charming. Its yellow is a rich bronze, and I do not know anything of the kind more attractive. *R. pisifera nana variegata* is also very beautiful—a dense miniature bush of a general bluish-gray aspect, except a portion of the lesser branchlets and leaves, which are pale yellow. But do not think I have begun to exhaust the curious forms of these *Retinosporas*. I have only given the most noteworthy to be found on a superior lawn. Any large group of *R. obtusa* will give you a dozen beautiful, diverse forms of weeping, pyramidal, and dwarf or spreading evergreens. All, or practically all, kinds of *Retinosporas* now used, came from Japan, where they are common, but highly valued in the beautiful gardens of that country. Mr. Hogg has not only introduced several of these new *Retinosporas*, but has given us possibly more new Japanese plants than any collector since the time of Robert Fortune's famous horticultural explorations. I must not leave these *Retinosporas* without calling attention again to their excellent adaptation to small places. If we restrict the planting on a small lawn to Japanese maples, *Retinosporas*, and two or three shrubs like *Spiræa crispifolia*, we may, with a little skill, almost defy the power of time to compass, by means of trees, the destruction of our grass plots. I must add, however, one other conifer to this seemingly short but really varied list of new hardy plants suited to miniature lawn planting.

I refer to *Sciadopitys verticillata*, the parasol pine, one of the most extraordinary evergreens known. The plant we see on this lawn is scarcely two feet high, and yet it is more than ten years old. Travellers in Japan tell us of specimens in Japanese gardens fifty and one hundred feet high, but certainly in youth the plant is wonderfully dwarf. Its strange habit is produced by the curious long, broad, dark green needles, or narrow strap-shaped leaves that cluster in parasol-like tufts at the end of each succeeding year's growth. The color is as dark as that of the yew, and the growth as compact. It is moreover, very hardy, and thus presents a combination of choice qualities, of the most strange, attractive, and valuable character. The plant is so entirely original in its forms, that it seems some lone type, the correlations of which are lost or yet to be found. As we look upon it, we begin to realize how thoroughly most plants of the same genus, all over the globe, are related to each other, just because we can think of nothing else that resembles the parasol pine.

A Japanese yew, near by, of rich and spreading habit, exemplifies this resemblance between different members of a genus situated in various parts of the earth. This Japanese yew, *Taxus cuspidata*, is, however, very noteworthy for great hardiness, a character that can be scarcely accorded to any other yew in this climate. *Thujopsis Standishii* is another Japanese plant on this lawn, of comparatively recent introduction. I want to call your attention to it, situated near the *Retinosporas*, not only because it is a beautiful evergreen somewhat like the arbor-vitæ in general appearance, but because it does better here, apparently, than in England. This is a peculiarity remarkable in an evergreen, for the moist climate of England seems to make for them a very home.

I should like to speak of other plants on this lawn, but they are either too difficult of attainment, like the *Cercidiphyllum*, a promising tree, or, like the dwarf pines and spruces, hardly new enough to come within the scope of this essay.

Before leaving the spot entirely, however, let us stand a moment and take a last look at the unity of effect accomplished on this lawn. Streams, borders of foliage, statuesque small trees and larger specimens, all flow, as it were, together in natural lines. Indeed, harmony of color and lines, combined with contrasts distinct enough to give variety, characterize the entire scene. The position of each plant is so related to the others, for purposes of beauty and perfect development, that one delights in the fair proportion and entire unity of the design. It is a picture, and yet something more than a picture: a combination of foliage and grass, constructed not in servile imitation of nature, but on the principles employed by nature in her most pleasing work. The copse or glade is suggested, and yet the treatment of each plant of our lawn is very different from that of the wildwood, and indeed, more honorable to that plant's highly cultured nature. Perfect maintenance and exquisite keeping are evident everywhere, from the skilfully-pruned shrub to the velvet turf that catches athwart its beautiful surface the level rays of the setting sun. Unfortunately, such lawns are extremely rare in America. We are learning to appreciate them, and in time shall have them, though the progress in that direction is slow; and I feel certain that nothing is more likely to aid in the development of a true knowledge of the resources of lawn planting than the consideration of new hardy ornamental trees and shrubs, and their tasteful and effective arrangement.

Discussion.

The Chairman said that we were greatly indebted to Mr. Parsons for the experience as to the new trees and shrubs and their arrangement, which he had given us. He came from a more southern latitude than ours, and possibly all the plants which he has mentioned may not succeed here. On this point the Chairman said he would, next week, ask the criticism of Mr. Harris, Mr. Atkinson, and other skilful cultivators, but on this occasion we had with us a gentleman well known to be thoroughly versed in the subject before the meeting, and the editor of the new edition of Downing's "Landscape Gardening,"—Henry Winthrop Sargent, of Fishkill, N. Y., of whose presence he desired the Society to have the advantage.

Mr. Sargent spoke first of the weeping hemlock, which was introduced by him, and which he said was a very good "find" by an old farmer on the mountains back of his (Mr. Sargent's) house. He has the largest tree of it, which is eight feet high, and spreads from fifteen to twenty feet. He has assisted the leader by tying it up to a stake. It is difficult of propagation. Mr. Sargent thought that all the trees and shrubs mentioned by Mr. Parsons could be grown here, and recommended particularly the golden yew, though for small lawns the *Retinosporas* are preferable. The golden color of the yew lasts only during its growth. It is the hardiest thing he has, except the *Cryptomeria Japonica*. Four or five years ago, when Norway spruces and white pines were destroyed, his *Cryptomeria* was not injured. He is always sure to find it green. Last year, an epidemic injured arbor-vitæ hedges; his own hedge which was planted forty years ago, next after A. J. Downing's, was so much injured that it must be taken up. He felt satisfied that we clip our evergreen hedges too close; the English have found out that the constant cutting back of trained fruit trees lessens their vitality. The *Cryptomeria* referred to, is from twelve to fourteen feet high, and stands under a weeping birch, fifty feet high, where it gets no morning sun and no southern sun, and is protected from the northwest winds. He has others which grow nearly as well. The golden yew is hardier than any other yew. The English yew grows with him without any difficulty; his trees have shelter on the east and southwest. It is more hardy than *Taxus Japonica*, *T. baccata*, or *T. erecta*. The finest evergreen tree he has is *Pinus ponderosa pendula*, whose branches hang down perpendicularly. He was much impressed with the remark of R. S. Field, that all

evergreens are beautiful in their youth, say, when five or six feet high, but when twenty feet high they lose their individuality, so that a Scotch fir, forty or fifty years old, looks like an Italian pine. There are twenty or thirty species, which all look alike at the age mentioned. Sir Joseph Hooker thought *Pinus Lambertiana*, the finest tree he saw in the country. Mr. Sargent has a specimen fifteen feet high. He said that if he were restricted to one evergreen tree, it would be the golden yew.

Mr. Parsons mentioned the *Cercidiphyllum*, of which Mr. Hogg has a tree fourteen feet high. The leaf resembles that of the *Cercis*, or Judas tree.

Mr. Sargent spoke of Lawson's cypress; he had no trouble in growing either the type or the variety *erecta viridis*. The varieties *argentea* and *aurea* he had also found hardy. His largest tree of the type is twenty-two feet high, and frequently sends out a shoot of golden color, which is propagated.*

The foliage of the Japanese maples suffers in the sun, and the leaves dry up and crinkle in hot weather, but there is nothing hardier in winter. They might be grown in pots like azaleas, so as to be very effective. They should, when so grown, not have too much sunlight, but should present the entire leaf surface to the light. Japanese nurserymen send to purchasers, instead of an invoice, a series of leaves representing the different varieties.

Mr. Parsons said that while the foliage of the Japanese maples suffers in the sun when the trees are young, those of fourteen years growth, in Mr. Hogg's grounds, do not suffer. The speaker had found them more hardy as they got age.

Mr. Sargent said that he imported *Acer polymorphum atropurpureum*, eight or ten years ago, and it is now six or seven feet high. In July and August the leaves crinkled, and when twelve degrees of frost came last October, the leaves were still full of sap and suffered. Though there was no change in the color of the leaves, he feared for the result, for the wood had not hardened.† But, seven years out of ten, they will be successful. They would do better in a shady or humid situation, than in a hot, dry place, or, if planted in sunlight, with their feet in moist soil, that would

* This tree, we are sorry to learn, has been destroyed this year by field mice.

† The same thing happened in August, 1880, from drought. H. W. S.

be best of all. There are no better evergreens than the *Retinosporas; R. filifera pendula* has truly thready branches, which hang down three feet not larger than knitting needles. All villa residences of two or three acres, should have *Retinosporas*, golden yews, and Japanese maples, instead of Norway spruces and trees of similar character. The speaker thought that in future we should have small places of four or five acres instead of those of five hundred acres, and these should be planted with magnolias, dwarf horse-chestnuts, and other trees of secondary growth. He has on his grounds a dwarf horse-chestnut forty years old, which is ten feet high and a hundred and twenty feet in circumference. This species is desirable as flowering after the others.

The chairman stated that the essayist was limited to new species, which would account for his omitting the golden yew, so highly recommended by Mr. Sargent. For the same reason, probably, the *Viburnum plicatum* was omitted. *Acer platanoides purpureum* is a distinct variety of the Norway maple—as striking and distinct as *A. platanoides Schweidleri.*

Mr. Sargent said that he had been much disappointed in *Acer platanoides purpureum. A. platanoides Schweidleri* loses its color. Dwarf evergreens should be planted in loose groups; you may have trees twenty-five years old not above a foot or two high. The *Chamæcyparis sphæroidea argentea* is of pyramidal form, with the tips of some of the branches silver and others golden. All silver tipped trees suffer more than golden. The *Chamæcyparis aurea* at Fishkill is quite hardy. Among deciduous trees the aucuba-leaved ash is desirable; the leaves are blotched with gold, and the tree resembles a gigantic *Aucuba Japonica*, but it is not constant. The golden oak (*Quercus concordia*) and the golden catalpa are very beautiful and desirable. The *Ulmus rugosa* is very curious; the tree is of pyramidal form, and the leaves are rough and rugged.

The Chairman said it was important to bring the trees and shrubs mentioned by the essayist before the public, but he thought we should have to cut down the list to adapt it to this latitude. The *Acer platanoides purpureum* mentioned by the speaker is new, and he had been pleased with it from one year's experience.

Mr. Parsons mentioned, as desirable small evergreens, the *Juniperus Japonica aurea* and *J. Sinensis aurea*, which have the foliage picked out with gold. They are very hardy—like red cedars for endurance.

Mr. Sargent said that Feast's and many other varieties of *Buxus* succeeded with him. *Euonymus radicans variegata* is recommended in English books as a substitute for the ivy. In England they train it against a wall like *Cotoneaster*, and he believed Walter Hunnewell has succeeded in this method of growing it. Charles S. Sargent thinks ours is not the same as the English. It is perfectly hardy, and valuable for edgings.

Mr. Parsons said he knew it would climb.

It was voted to continue the discussion of the subject the next Saturday.

MEETING FOR DISCUSSION.

SATURDAY, January 24, 1880.

A meeting for discussion was holden at 11 o'clock, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding. The Chairman called on William Gray, Jr., for information concerning the *Abies Menziesii*, or, as it is termed by the latest authorities, *Picea pungens*.

Mr. Gray said that Prof. Asa Gray gave him three plants grown from seed collected on the eastern side of the Rocky Mountains, in Colorado, one of which was glaucous blue, one light sea-green, and the other intermediate. The greenest one made the most growth. They show some tendency towards spindling, but not to losing their lower branches. Mr. Gray added that the *Sciadopitys verticillata* or umbrella pine is one of the most promising new evergreens, and is perfectly hardy. He had two variegated ones, both of which were destroyed by the winter, though his experience with variegated trees had been that they are generally as hardy as the plain ones, and some of them more so. The golden yew is more hardy than the plain one; the green one grows stronger, and does not ripen its wood. All the Japanese evergreens that he had tried were hardy. *Cryptomerias* appeared to be hardy if they had shelter. The *Euonymus Japonicus* and the *Picea pungens* from Waterer were not hardy.

The Chairman said that Robert Douglas, of Waukegan, Ill., is

of the opinion that Waterer's trees are of the California type. He had imported trees from France which proved not to be hardy.

F. L. Harris, gardener to H. H. Hunnewell, said that the specimen of *Picea pungens* at Wellesley, came originally from Dr. Gray. It is more glaucous than that at the Botanic Garden or than William Gray, Jr.'s. The latter are glaucous but not so much so as Mr. Hunnewell's. The Douglas spruce never thrives when imported from Europe, but those raised here by the speaker had proved perfectly hardy. Some of them are twelve feet high and clothed with foliage. *Abies polita* and *A. Cephalonica* are among the best. The specimen of the latter at Wellesley is twenty feet high. *Abies Nordmanniana* will take the place of the European silver fir. Whenever a coniferous tree produces seed its growth is checked. *Abies Nordmanniana* produces large cones, which, though very striking in appearance, should be removed to promote the growth of the tree. *Retinospora squarrosa* should be more generally planted; it grows luxuriantly, is beautiful both in summer and winter, and is perfectly hardy. *R. plumosa* and *R. plumosa aurea* are the same; they require shelter when young. *R. filicoides* and *R. filifera* are very beautiful for small yards, and the speaker hoped to see them planted in the place of Norway spruces. He could not say that the Japanese maples are successful except *Acer polymorphum* and its variety *atropurpureum*. The foliage of the finely cut and delicately tinted varieties shrivels up. The species just named seeded well contiguous to an ash-leaved negundo, and he expected to get something remarkable from it, but the seed was stolen. He did not agree with Mr. Sargent in regard to pruning evergreen trees, as respects specimens, but hedges must be pruned severely while young. Isolated specimens only need to have the luxuriant shoots taken out so as to keep them within bounds. Mr. Harris suggested that when Norway spruces grew too large the limbs should be cut off within a foot or two of the trunk. Though this would disfigure them for a time, branches as large as a man's wrist would soon send out young shoots and form a beautiful column. The best time for such pruning is when the sap begins to flow, say from the 20th of April to the 10th of May. When rhododendrons get straggling they may be treated in the same way.

The Chairman said that while seedlings of the Douglas spruce from Europe are tender, those raised from Oregon seed are hardy. The experience of Robert Douglas, as well as of Mr. Gray and

Mr. Harris, is to the same effect. The Colorado type is hardy. If we encourage the seeding of specimen trees whose hardiness is doubtful, we may get a hardy type. He had raised seed of *Cupressus Lawsoniana*, but it did not vegetate.

Mr. Harris said that though *Cupressus Lawsoniana* is not generally hardy, there is a specimen at Wellesley eighteen feet high. It is protected by a belt of white pines. Such protection is necessary for many species.

Henry Winthrop Sargent said that his *Picea pungens* is the same as Mr. Gray's. His theory is that they should be cut back as soon as they begin to look spindling. He cuts back *Quercus concordia* nearly to the ground, and the golden catalpa quite to the ground. The finest *Retinospora* at Wellesley is getting to be what the English call "woody." He thought this was to be a trouble with the *Retinosporas*, and that they should be cut back. Mr. Harris is right, from his standpoint, about cutting back hedges, but twenty years hence he may think differently. The speaker treated his hedge as Mr. Harris advised, but soon began to have dead wood, and last year there was hardly any foliage. He cut back as suggested in "The Garden," but the trees had not vitality enough to recuperate, and now nine out of ten of them are dead. The hedge is forty years old. The same experience has been general on the Hudson river. A hedge which, though not vigorous, presents a general appearance of verdure, is better than a dead one. The arbor-vitæ hedge was invented by A. J. Downing fifty years ago, and there is one at his place fifteen or twenty feet high. The speaker would take off the tips of the shoots with shears and keep the top even, but would clip less and less every year, and when the hedge got sufficient height would give only a general trimming. All colored evergreens should be clipped, say once in two years. Except *Acer polymorphum sanguineum* and *A. polymorphum atropurpureum* all the Japanese maples will do best in pots.

The Chairman said that *Retinospora squarrosa* is one of the finest varieties; there is none more charming in Mr. Hunnewell's grounds. The specimens there are much superior to those at Mr. Parsons's. There is a sub-variety *Veitchii*. The difficulty in cutting back *Retinosporas* is that it makes them more dense, and favors the growth of fungi, as in *R. ericoides*. *Retinospora squarrosa* generally requires thinning out, but most of Mr. Hunnewell's specimens are open.

Mr. Harris did not know that they had two varieties of *Retinospora squarrosa*. He takes out a branch whenever he sees one that needs to come away. It would be an endless work to prune trees thirty or forty feet high every two years, and it would soon deprive them of their individuality; to preserve that they must be let alone. He expected, if he lived, to see *Retinospora squarrosa* twenty-five feet high, but the inner foliage would then have passed away, and we should have bare stems as we now have in white pines. He believes in high culture; in an azalea border, part of which was trenched and highly manured, the plants near the edge grew stunted as they sent their roots into the virgin soil. The same holds with all evergreens; they want high culture. The beautiful arbor-vitæ hedges at Wellesley are contiguous to highly cultivated borders, and he saw no reason why they should not go on for fifty or a hundred years. In England yew hedges are cut right back.

Charles M. Hovey did not think that there are two varieties of *Retinospora squarrosa*. Many of the coniferous trees, particularly arbor-vitæs, vary in foliage with age. *Retinospora ericoides* always does well until an unfavorable winter occurs, and then it is cut down. He had never had *R. plumosa aurea* injured. The other *Retinosporas* are very hardy. He had tried all the old varieties of conifers, and many were hardy in Mr. Hunnewell's ground, which is light, with a dry bottom, that were not hardy on his (the speaker's) ground. He could not get up the yews to any size. *Taxus Canadensis* (the American yew) is very beautiful, especially when full of berries. He had planted out *Abies Cephalonica*, and one, behind a holly hedge, where it is sheltered from the winter sun and cold, is now a fine specimen. He thought that Mr. Sargent and Mr. Harris were both right in regard to pruning, and he also agreed with Mr. Sargent that in future we should have, instead of places of several hundred acres, those of a few acres, planted with *Hydrangea paniculata*, *Viburnum plicatum*, *Retinosporas*, and other shrubs and trees of growth proportioned to the size of the place. The shears should never be admitted when landscape beauty is desired; if they are used, everything becomes alike, and the natural beauty of each tree is lost. Mr. Hovey questioned whether high manuring would not cause a sappy growth, more liable to be winter-killed, as in pears, peaches, and grape vines. In England the opinion is that fresh manure does not immediately injure the pine family. Mr. Hovey spoke of the

hemlocks in Maine, and said that when cultivated they should be protected from high winds. For real beauty this tree stands at the head of all evergreens, and should be planted more than it is, but it does not generally do well in England. He described a visit to Admiral Egerton's park of thirteen hundred acres, where he saw *Sequoias*, *Araucaria imbricatas*, and hemlocks—the latter growing as finely as in their native soil; but the Admiral said that such trees were very rare in England. Weybridge, where this park is situated, is all peaty soil. Hardy cyclamens were in flower there in the open ground on the 17th of April. They had little bright sun then, and by the time the sun got well up the frost would be out, while here the sun would strike and blacken the foliage of all plants not perfectly hardy.

Mr. Sargent said that he would not cut back every *Retinospora*, but only such as are in sight from the house, and would leave others to develop naturally. It is not generally understood here that in England purple beeches retain their color through the season. Would not the same cause produce the same effect on the barberry, filbert, etc.? His Norway spruces of forty years' standing had failed so much that he thought of cutting them down. He dresses his conifers with old manure once in three years, and the intervening years with soil. The *Cephalotaxus*, of which he has three species, grows so late that it should not be stimulated, but Norway spruces and cedars of Lebanon finish their growth early.

The Chairman said that for this climate we must make some exceptions to the trees and shrubs recommended in Mr. Parsons's paper. He (the essayist) recommended growing Japanese maples in pots. The *Acer Negundo* does well at Mr. Hunnewell's, but not generally. The varieties of *Acer polymorphum*, even *atropurpureum*, are all affected by our climate. If Mr. Harris speaks doubtingly of them we should be very cautious how we use them.

C. M. Atkinson said that the *Picea alba* or white spruce is a very magnificent tree, and should be in every collection. The *Abies Douglasii* had been mentioned as tender, but there is a fine tree in the late John J. Dixwell's place in West Roxbury; and on the estate of John L. Gardner, of which the speaker has charge, is a young tree which grew two feet in a season. Trees raised from California seed do not seem to be hardy, but those from Colorado seed are perfectly hardy. *Picea orientalis* is, without doubt, one of the most beautiful and desirable

trees. There is a very fine specimen at Mr. Gray's. On Mr. Gardner's place is an *Abies Cephalonica*, planted five years ago, which, though exposed to the sun, is perfectly hardy. It is sheltered from the northwest winds by a high bank. There is on the Dixwell estate a very fine plant of *Abies nobilis* about six feet high. At Dropmore Mr. Atkinson thought this species the finest thing he ever saw. *Abies Nordmanniana* and *Abies grandis* are also very fine and perfectly hardy. *Cupressus Lawsoniana* is generally considered tender, but on the Dixwell place is one fourteen feet high, and Mr. Sargent is propagating it. There are also on the same place several magnificent specimens of the American holly (*Ilex opaca*) from twelve to fifteen feet high and finely proportioned. Hoopes says that *Retinospora squarrosa* is not hardy, which is incorrect; it is perfectly hardy, and is getting common and deserves to be. The Irish juniper is a good thing, but it should have a few spruce boughs placed around it in winter.

Mr. Atkinson confirmed what Mr. Harris had said of the need of high culture for evergreens. In a plantation at the late John P. Cushing's place in Belmont, compost was distributed in trenches between the trees, and those manured were green and healthy while others were yellow. Mr. Gray's handsomest specimen of *Abies Menziesii* or *Picea pungens* is of so beautiful a blue as at once to arrest attention. The inner part of the foliage is brown, and the outer blue. The blue variety is called *Parryana*, and is destined to take the place of the Norway spruce. The latter is only adapted for planting on the outskirts of grounds. Now that there are so many superior species, to plant Norways shows either ignorance or very bad taste. Mr. Atkinson related an instance where a misty rain congealed on the branches of a Norway spruce, and a brisk wind coming on afterwards the branches were all rubbed bare. The specimens of tree box, on the north side of the house and under trees, at Pine Bank, the estate of Edward Perkins, on the border of Jamaica pond, present a very cheerful appearance.

The Chairman said that he had a specimen in a northwest exposure.

Samuel Parsons, Jr. said that he labored under a great disadvantage in not knowing what is hardy here and what is not. To decide this will be one of the great benefits of the Arnold Arboretum, which has one of the most enthusiastic arboriculturists in the country at its head. Every plant will have proper attention, and

we shall have a list of all the really hardy trees. Mr. Parsons said it was surprising what a quantity of trees and shrubs had been collected, and he advised all to go and see the Arboretum.

Mr. Hovey was surprised that the American holly, which grows within twenty-five miles of Boston is not cultivated. It is not as beautiful as the English species, but very nearly so. He imported one or two hundred trees from England, of which Mr. Dixwell, of Brookline, had four, and he had four or five left, which are now twenty-five years old and from twelve to eighteen feet high. It should be planted in large or small grounds. It is true that it is somewhat difficult to transplant. Mr. Hovey commended the Queen Victoria and George Peabody arbor-vitæs, from Western New York—the former tipped with silver and the latter with gold. Maxwell's Glory of the Spruces is golden on the upper side of the leaves; it is a slow grower, but otherwise like Menzies's spruce. These three are indispensable. The dwarf arbor-vitæs, such as Hovey's, Hoopes's Dwarf, and others, are desirable trees; as are also the dwarf spruces, such as *Gregoryana*, *pumila*, *Clanbrasiliana*, etc.

Mr. Sargent confirmed Mr. Hovey's opinion of the value of the Queen Victoria and George Peabody arbor-vitæs and Maxwell's spruce, but said that *semper aurea* is even a better arbor-vitæ than George Peabody. *Picea orientalis* is one of the finest trees on his place; it has small dense foliage. He saw no reason why the American holly should not be grown, but it is seldom planted by nurserymen. Mr. Mechan, who raised some at the request of the speaker, said there was no demand for them. Every one who begins now should plant a holly hedge, and purple beech and blue spruce trees.

Mr. Harris said that the best holly at Wellesley was exposed to the north wind.

Benjamin G. Smith said the holly grows finely at Cohasset.

Mr. Hovey said that he had a fine specimen of *Picea orientalis*, but that the trees are rather scarce and people are not aware of their beauty. It is a slow grower; a Norway spruce would grow ten feet while *Picea orientalis* grows three. If there was a demand for it, it would no doubt be supplied. If American hollies could be sold by the thousand they could be afforded at low rates.

Mr. Sargent recommended the *Picea Pinsapo;* the leaves are all recurved, and it is perfectly hardy.

Mr. Hovey said it is not hardy in Massachusetts.

The Chairman said that it had not flourished with him.

J. W. Manning said that his *Picea Pinsapo* looked bright. He has had the Douglas spruce for some years, and finds it adapted to this latitude. Lawson's cypress is not hardy with him. He saw *Abies grandis* at Rochester; it is of very slow growth, very stocky at the base, and the branches are very thick. *Retinospora squarrosa* is of thrifty, upright growth. *R. ericoides* went through the winter well. All *Retinosporas* should be shortened in annually, to keep an entire green surface. If this is not done the foliage of previous years will show red and unsightly. The green *Euonymus Japonicus* stands the winter perfectly at Gloucester.

The Chairman thought that the Japanese maples would be of little use here. While the *Retinospora aurea* is very desirable, the golden spiræa produces a much stronger effect in summer. We desire sunlight most in dark weather, and this plant gives a sunlight effect in the darkest days. The speaker was much pleased with the effect of the golden pyrethrum which he saw in England, in lighting up the beds, and a hedge of golden spiræa which he has planted is as bright as the pyrethrum. If clipped it will retain its color through the season. The purple beech may be planted when a dark effect is desired. We want to bear in mind the plants which grow with ease.

The Chairman suggested the appointment of a Committee to prepare a list of new trees and shrubs which could be recommended for planting here.

Mr. Hovey said that such a list, with the results of the experience at Mr. Hunnewell's and Mr. Sargent's, would be of much value, but the climate of Fishkill is very different from that of Boston, as are also the conditions of soil. Many trees hardy at Fishkill and Wellesley are not so in the strong, moist soil of his (Mr. Hovey's) ground.

The Chairman announced that on the next Saturday Mrs. C. N. S. Horner would read a paper on native plants.

MEETING FOR DISCUSSION.

SATURDAY, January 31, 1880.

A meeting for discussion was holden at 11 o'clock, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding. The following paper by Mrs. C. N. S. Horner, of Georgetown, Mass., was read by the author. This was the first instance in the history of the Society of the reading of a paper by a lady; and the ladies (of whom there was an unusual number) and gentlemen present were much interested and gratified.

NATIVE PLANTS.

I do not come before you today with any learned essay on the science of botany, or any new theories concerning the phenomena incident to the vegetable world. But I am glad to have the opportunity to speak to these flower-lovers a few words in commendation of the trees, shrubs, and flowering plants growing spontaneously and making the world around us beautiful without care and labor from gardener or florist.

My knowledge of plants is largely practical, and the natural outgrowth of an inborn love of nature as we find it in our fields, woods, and meadows—although when learning the rudiments of the science in my school-days, I also received from my teacher another lesson which has been of life-long value to me. This was, that while comparatively few could become thorough botanists like "the great Linnæus," as she loved to call him, yet to the many was accorded the privilege of becoming acquainted with the properties, habits, and homes of our native plants and of learning from companionship with nature in its various forms, that which books alone could but partially teach. Thanks to her wise directing I have studied the book of Nature for the most part in this way, and have come to know—I cannot tell when or how—much of wild-flower lore, and from the time of the first opening buds of *Epigæa* and *Hepatica*, till the November sun lights up the pale golden petals and tawny fruit of the *Hamamelis*, there is for me a charm in each successive page of this book which makes it impossible that it shall ever grow wearisome or old; and I would that those who have hitherto found the study of botany dry and uninteresting

might, through one flowery summer, as opportunity offers, go with book and microscope to the sunny fields and cool woodlands, and see the wild flowers in their own haunts with their harmonious surroundings, and I am sure that text-books would no longer seem collections of unmeaning phrases and names hard to be remembered, but rather the initiatory training necessary for the better understanding and enjoyment of a field of research, in a measure accessible to all, and in which some of the highest capacities of the soul may find scope.

I would say, in passing, that there are many advantages in giving to each flower its botanical name, and the surest way to be able to do this is to see the flower itself and thus associate the two. There is often much misunderstanding caused by the many local names given to the same flower. For instance: several ladies were one day discussing the merits of my fernery. One said, "O, that foxglove has blossomed;" another said, "What do you call foxglove?" And when it was pointed out to her, she said, "That is hunter's cup; the foxglove is a very different thing; it has a blue flower that never opens, but always resembles a bud."

It would be a tedious and well nigh impossible task to enumerate even the more rare and desirable among the native plants of our own State, for those conversant with the out-door world know that during the warmer months of the year each day offers something peculiar to itself; each locality has floral treasures of its own.

"Not alone in meadows and green alleys,
On the mountain-top, and by the brink
Of sequestered pools in woodland valleys;
* * *
Everywhere about us are they glowing,
Some like stars, to tell us Spring is born;
Others, their blue eyes with tears o'erflowing,
Stand, like Ruth, amid the golden corn;
Not alone in Spring's armorial bearing,
And in Summer's green-emblazoned field,
But in arms of brave old Autumn's wearing,
In the centre of his brazen shield."

And even in midwinter the landscape is enlivened by a variety of evergreen trees and shrubs, and in the forests the lichens, mosses, and lycopodiums are always fresh and beautiful. Then

the manner of growth, the different forms of buds, and the variously colored twigs and barks of deciduous trees, are more noticeable at this season, and might furnish to botanical clubs and classes a profitable subject for study when field meetings and outdoor rambles are no longer possible. I have brought in today a few specimens showing that winter woods and waysides may always furnish something of interest.

Among things of a practical nature that have grown with my years of companionship with the wild flowers, is the conviction that many of our local plants and shrubs would be valuable acquisitions to our gardens and conservatories, comparing favorably with a large number of our cultivated flowers; indeed I find that many of the plants of New England gardens are the wild flowers of our Western States. I have received during the past season a collection of pressed specimens found in the mountains and cañons of Colorado, and among them I recognize many of our garden flowers, such as Delphinium, Chrysanthemum, Coreopsis, Aquilegia, Phlox, and others. I think we have many herbaceous plants just as worthy of a place in our gardens. We have also many shrubs and small trees, beautiful in flower and fruit and gorgeous in autumnal foliage, which might be admitted to our cultivated grounds with good effect. Most of our native ferns, too, may be easily brought under cultivation, adding very much to the grace and elegance of our gardens. The smaller species are admirable for in-door culture, and, in company with other wood plants, make charming winter gardens for shady corners and northern windows, where beautiful exotics and delicate plants that need sunshine will not be successful. Some of our native plants have been reclaimed, and have already a well established position as both ornamental and useful, and I think there is an increasing interest in this matter which will doubtless result in a wise selection of those plants that will best minister to our pleasure and profit, thus utilizing another of the good gifts of a beneficent Providence.

This subject is one of many aspects of Nature which are full of interest to inquiring minds—the great variety of forms of leaves, flowers, and fruits, the perfumes, the ways in which plants are perpetuated and disseminated, their relations to other forms of life, etc.; but I will not dwell longer upon it. I would say in conclusion that if we would truly understand and love *Nature*,

while gratefully accepting the aid afforded by the investigation and study of those further advanced than ourselves, we should meet her face to face, asking for that revelation of herself by which she may accomplish her mission of good to our race, in its broadest sense, giving to us truer ideas of the creative power and goodness of Him who has "made everything beautiful in its season."

Discussion.

The Chairman said that Mrs. Horner's paper seemed to fall into line with the subject discussed on the two previous Saturdays. Mr. Parsons dwelt on many new shrubs which might require to be cultivated in pots, but the plants mentioned by Mrs. Horner are all hardy here. The Chairman called on E. H. Hitchings, as a lover of native plants.

Mr. Hitchings said he was glad that Mrs. Horner had recommended the cultivation of our native trees and plants. Mr. Hovey last Saturday recommended the cultivation of the American holly, and of this the speaker said he had seen beautiful specimens at Cohasset, twenty-five feet high and covered with fruit. He also advised the cultivation of the *Taxus Canadensis* or American yew, as one of the handsomest dwarf evergreens. He spoke of a remarkably fine specimen of the hemlock, at West Dedham. Among other native shrubs which deserve a place in our gardens are the *Viburnum Opulus*, *V. lantanoides*, *Kalmia glauca*, *Ledum latifolium*, *and Andromeda polifolia*.

Most persons think that during the five cold months, Nature is at rest. Even Col. Higginson, in his "Out-Door Papers" (page 321)—a book which every lover of Nature should read—says, "After exhausted October has effloresced into witch-hazel, there is an absolute reserve of blossom, until the alders wave again" in March. But, taking a series of years, the speaker had found flowers in blossom every month in the year:—January 11th, 1874, hepaticas; 15th, 1878, *Senecio vulgaris;* 27th, 1870, willow catkins; 28th, snowdrops and crocus; February 3d, 1867, snowdrops; 27th, 1868, willow and alder catkins; 28th, hepaticas; March 7th, 1880, hepaticas; 17th, 1873, *Senecio vulgaris;* 19th, 1871, hepaticas; 20th, 1868, willow, and alder catkins; 24th, 1878, hepaticas; 25th, 1871, alder, willow, and poplar catkins; 30th, 1878, hepaticas and alder and willow catkins; 31st, 1871, *Draba verna;* November 5th, 1871, *Geranium Robertianum;* 9th, 1879, hepaticas, *Viola*

Canadensis, and dandelions; 13th, 1872, *Geranium Robertianum* and *Corydalis glauca;* December 2d, 1869, witch-hazel, mayweed, chickweed, and shepherd's purse; 2d, 1879, hepaticas; 16th, and 25th, 1877, dandelions.* These instances show that Nature is always at work; there is no cessation. If you go out and examine the alder catkins in midwinter, and examine them again ten or fifteen days later, you will see that they have grown considerably.

Mrs. Horner added to the list of native shrubs desirable for cultivation the *Clethra alnifolia* and *Potentilla fruticosa*, the latter a very handsome shrub, blooming through the season.

The Chairman and others mentioned the *Ilex verticillata*, or black alder, which grows naturally in rather moist soils, and bears bright red berries, as desirable for cultivation.

Benjamin G. Smith said this shrub would thrive in any good garden soil, as would also the beautiful and fragrant pink swamp azalea.

Mr. Hitchings said that the case is the same with the *Calopogon*, which he had found growing in dry, sandy loam, though it usually grows in swamps. The *Cornus florida* is very desirable for gardens. There is a very fine specimen on the lawn at C. S. Sargent's residence in Brookline.

The Chairman mentioned the *Ilex lævigata*, and added that the *Clethra* is desirable not only for the beauty and fragrance of its flowers, and for its handsome foliage, but because it flowers at a time when few shrubs are in bloom.

Leander Wetherell said that for twelve or thirteen years he was required to note the time of flowering of the earliest blooming tree, shrub, or plant. This was at Rochester, N. Y., and for miles

---

* Since this meeting Mr. Hitchings has added the following note: For twenty months in succession, viz., from April, 1879, to November, 1880, inclusive, wild flowers have been in bloom every month in the vicinity of Boston. In Chelsea, November 9th, 1879, hepaticas and *Viola Canadensis;* in Georgetown, December 2d, hepaticas, found by Mrs. Horner; in Danvers, January 10th, 1880, *Draba verna*, by John Sears; in Chelsea, January 29th, hepaticas; in Melrose, February 29th, 1880, hepaticas, by S. B. Stebbins; March 4th, in Danvers, hepaticas and *Draba verna*, by Mr. Sears; in Chelsea and Melrose, March 7th, 1880, hepaticas; in Chelsea, November, 1880, *Viola pubescens*, and hepaticas; in Melrose, November 14th, *Geranium Robertianum* and ranunculus.

around that city there was hardly a tree or shrub but he knew and watched it. He found the red maple one of the best indicators of the season. It was noticed that yesterday (January 30th), they advanced in some localities. Professor Dewey called double flowers monstrosities. You cannot tell anything about a flower when you have bred all nature out of it. The botanists of the garden are not in accord with this opinion. Mr. Wetherell agreed with the essayist in regard to the difficulty of identifying plants by common names, while botanical names are the same the world over. To illustrate the misleading nature of common names, he spoke of the blue grass of Kentucky (*Poa pratensis*), the blue grass of the botanists (*Poa compressa*), and the June grass or white top of farmers (*Danthonia spicata*), three distinct species, which are all known by the name of June grass.

Mr. Hitchings alluded to Mr. Tailby's *Cypripedium insigne* with two flowers on a stalk, and said that he had found the wild *Cypripediums*, *acaule* and *pubescens*, growing in the same way, and also the *Arethusa bulbosa*.

John G. Barker spoke of the growing interest in the cultivation of native plants. At the fair of the Essex Agricultural Society at Lynn last fall, Cyrus M. Tracy exhibited a collection of native plants, labelled both with the botanical and common names, and Miss Tracy a fine named collection of native ferns and also one of native fruits, which added much to the interest of the show. The collection exhibited by Mrs. Horner today reminded him of what he saw along the road, in a drive from Lynn to Salem a few days since. There was something interesting all the way—ferns, lycopodiums, cranberries, etc.

Mrs. H. L. T. Wolcott asked if no one had anything to say about the buttercup. The popular song gave value to the flower and made its beauty appreciated.

Fearing Burr thought a more absurd collection of names than the common names of plants could not be found. Many of them are only local, and are unreliable. He had brought together all the native asters he could collect, some of which are exceedingly beautiful. He had also made a collection of golden rods, of which the marsh golden rod (*Solidago sempervirens*) is particularly beautiful. One of our native violets propagates so rapidly when cultivated in the garden as to become a troublesome weed.

Miss E. M. Harris spoke of a mountain ash with unusually large

berries, and said that Mrs. H. D. Wilmarth has a mountain ash, brought from the White Mountains, which bears uncommonly fine berries—larger here than in its native place.

C. M. Hovey thought the purple Rhodora, in regard to which an inquiry had been made, had not been much cultivated, but said that it grew wild abundantly on his grounds before they were cleared. He recommended the *Asclepias tuberosa* as one of the most beautiful native plants, and readily cultivated. It blooms in August.

A lady spoke of the *Amelanchier* or shad bush as desirable for cultivation.

The Chairman said that Mrs. H. L. T. Wolcott cultivated the maiden hair fern and the *Viola pedata bicolor*.

John B. Moore said that the maiden hair fern would grow in any partially shaded place.

Mrs. Horner said that Samuel P. Fowler, of Danvers, a lover of native plants, had cultivated the *Asclepias tuberosa*. She had herself cultivated the cardinal flower, but it would not do well for more than two years. She exhibited shoots of the tupelo (*Nyssa*), a tree of moderate growth, and remarkable for the rich color of its autumnal foliage.

Mr. Hovey said that he had trees of the tupelo twenty years old and twenty-five feet high, which he raised from seed. When cultivated it is more beautiful than in the forest. Few trees surpass it; the texture of the leaf is like that of the camellia, and in autumn it is like a tree of fire. It is at all times and in all places one of the most beautiful trees. The cardinal flower grew naturally in his ground, which was very rich in native flowers; he had gathered two hundred species there. It was broken up and reclaimed in 1848, and eight years ago the *Lobelia* appeared around the holes where trees had been taken up, and he saw it last year in similar situations. The old English authors gave directions for cultivating it.

The chair was here taken by Rev. A. B. Muzzey, of the Committee on Publication and Discussion.

Mr. Hitchings thought the sweet briar was indigenous. Bartholomew Gosnold found it at Martha's Vineyard in 1602.* Mr. Hitchings spoke of the *Potamogeton Robbinsii*, as remarkable for the paucity of its seeds; only one had been found in fifty years,

* Mass. Hist. Soc. Coll., Third Series, Vol. 8, pp. 76, 77.

and it is a question among botanists how the plant is distributed.*

John C. Hovey asked whether *Sempervivum tectorum* is indigenous here.

John B. Moore had seen it in Sudbury; George Hill in Arlington; Leander Wetherell in the western part of Worcester county, and Robert Manning in Swampscott. In every case it was on ledges, and was not indigenous but had evidently been introduced.

E. W. Buswell said that not only the *Sempervivum tectorum*, but the *Sedum Telephium* or Aaron's rod is called houseleek.

John C. Hovey said there are a number of native *Sedums*.

Mr. Strong remarked in allusion to a specimen of the Baroness Rothschild rose, exhibited by him, that it had been confounded with the Baron Rothschild, both in this country and in Europe. One of the most reliable French nursery firms has sent out the Baroness instead of the Baron, but they are entirely distinct. The latter is darker than the former and the wood is entirely different.

The specimens exhibited by Mrs. Horner comprised three species of *Cornus—stolonifera*, *sericea*, and *alternifolia*, with bright red and purple barks; the red cedar, bayberry, *Gaultheria*, and *Mitchella* in fruit; the tupelo with its smooth gray shoots; the hazel nut and alder with their catkins; a poplar with varnished buds, and willows showing their silky catkins; glossy hemlock, and white and pitch pines; *Ostrya Virginica*, sassafras, witch-hazel, *Amelanchier*, alder, wild rose, white and yellow birch, blueberry, *Lycopodium complanatum*, *L. dendroideum*, *L. clavatum*, and *L. lucidulum; Botrychium*, and other ferns; *Goodyera pubescens* and *G. repens; Pyrola*, pepsissiwa, *Arctostaphylos*, cranberry, and others, each with a beauty of its own, and showing that winter woods and waysides may always furnish something of interest.

The Chairman gave notice that on the next Saturday William D. Philbrick would read a Prize Essay on the Profits of Farming and Gardening in New England.

---

* Since this was said it has been found in fruit at Jamaica pond, by Edwin Faxon.

BUSINESS MEETING.

SATURDAY, February 7, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

The following vote, offered by John B. Moore, and seconded by William H. Spooner, was unanimously passed :—

Voted, That the Library Committee be directed to examine and report at the next meeting of this Society, some suitable plan by which this room can be made more convenient and better adapted for the uses of the library and meetings of the Society for the transaction of business and for the purposes of discussion and exhibition.

The Secretary announced the receipt of a letter from Mrs. S. A. Hall and Mrs. G. A. Hall, gratefully acknowledging the resolutions passed by the Society in memory of their father, the late Josiah Newhall.

The following-named persons, having been recommended by the Executive Committee, were on ballot duly elected members of the Society :—

BENJAMIN F. BUTLER, of Lowell.
GEORGE B. LORING, of Salem.
DAVID N. SKILLINGS, of Winchester.
CHARLES F. CHOATE, of Cambridge.
GEORGE O. CROCKER, of New Bedford.
ALFRED W. PAUL, of Dighton.
CALVIN W. SMITH, of Grantville.
JOSEPH R. LEESON, of Newton Centre.
AMOS HILL, of Belmont.

Adjourned to Saturday, February 21.

MEETING FOR DISCUSSION.

Immediately after the adjournment of the business meeting, a meeting for discussion was holden, at which the following Prize Essay was read by the author, William D. Philbrick, of Newton Centre, Mass. :—

The Profits of Farming and Gardening in New England.

A popular writer (Peter Henderson, in "Gardening for Profit," page 16) very aptly says of this topic, that "it is a rather difficult, if not a delicate matter to touch, as the profits are so large, in some instances, as almost to exceed belief, and so trifling under other conditions, as hardly to be worth mentioning."

The subject is a difficult one for other reasons; for it is well known that most men, especially successful men, are willing to speak of almost any subject with more freedom than of their profits or losses. If a man meets with remarkable success in any particular direction, he is very apt to keep it to himself for fear of competition from others, and if he meets with serious loss, he is still more likely to hold his tongue, from fear of injury to his credit as a prudent manager. Some, indeed, of boastful disposition, will tell wonderful stories of their profits, but those who are willing to state, freely and truthfully, the result of their toil, are rather rare exceptions to the general rule.

The profits of farming in New England are in general very small, except in certain specialties, which shall be mentioned below. Since the completion of our railroad lines extending over the vast and fertile prairies of the West, and since the establishment of steamboat connections with the early and productive gardens of our middle and Southern States, we are forced to compete with the industrious farmers of these distant regions, in supplying our markets with produce of almost every description. True, the distant farmer must submit to many expenses, such as freight, insurance, commissions, and even loss of perishable goods in transit; but these are in many cases more than counterbalanced by the cheap and fertile lands, the milder climate, and cheaper labor of those regions.

The tiller of the stony hill-sides and sandy plains of New England finds little to encourage him in competing with the West in the production of the great staples, such as corn, wheat, beef, and pork; or with the southern and middle States, in the production of such early fruits and vegetables as admit of easy transportation. Our early strawberries, peas, and even potatoes and tomatoes, come to a market that has been already several weeks satisfied with southern supplies.

The farmer of New England is thus driven to the production of

articles which will not bear transportation from long distances, such as fresh milk and eggs for the city markets; fresh vegetables and fruits of a perishable nature, like lettuce, celery, cauliflowers, and others; or of a bulky character, such as cabbages, rhubarb, spinach, and other garden greens.

It is generally admitted that corn can be grown in New England at a cost of from forty to fifty cents a bushel, and it is common for farmers to raise what they wish to feed on the farm; but the limited area of good land, and the need of manure, prevent it from being grown for sale.

Experiments are now in progress in Maine and elsewhere upon the production of beet sugar, with some prospect of success. The sugar beet, with good culture, yields from twenty to forty tons per acre, which are bought at six dollars per ton at the sugar-works. The refuse pulp is a valuable fodder for cattle, worth about one-third or one-half the price of good English hay. The beets yield about eight per cent. of sugar.

The progress of this experiment will be watched with much interest by the farmers, who are looking earnestly for something to which they can profitably turn their hands. Wherever beet sugar-making has been introduced in Europe, it has increased the productive power of the soil, and improved the condition of the farmer.

The profits of gardening are, in general, much larger than those of farming. The reason for this is to be found in the larger capital required and the greater skill needed to produce the best results. The best vegetable gardens near Boston are worth $1,000 or more per acre. They are worked by a very energetic and skilful class of men, who use a floating capital of $500 or more per acre, invested in teams, hot-beds, tools, manure, etc. The force used upon such gardens is about one man for every acre in summer, and the amount of manure twenty to thirty cords per acre, every year. The sales, under favorable circumstances, amount to over a thousand dollars per acre.

There are many instances, known to the writer, of men who began life with no other capital than a brawny arm and an active brain, who have worked up, in this pursuit, to the ownership of valuable gardens, besides a handsome property in personal estate. One of the most remarkable of these men states, that the yearly profit of his whole garden of twenty acres reached an average of

$400 per acre for six consecutive years, or an annual profit of $8,000. This was, however, several years ago, when the competition from the South was less active than at present. Probably the present profit, under the same management, is considerably less. This, too, is to be regarded as an extreme case—a rare combination of skill, energy, and ample capital. Where one such man as this is to be found, there are scores of others less successful, besides many who earn but a poor living by severe toil.

Small fruit growing is profitable when followed with industry and energy. But as less capital is required, and as the crop can easily be marketed by railroads from a distance of fifty miles or more, the competition is sharper and the margin for profit less than with vegetables in general. A profit of from two to three hundred dollars per acre in this business is considered very satisfactory. Currants, upon good land and well cared for, will yield, at present prices, about fifty cents per bush, or nearly a thousand dollars per acre, and are a reasonably sure crop. Strawberries, raspberries, and blackberries, all deserve more attention than they have received in New England. These fruits come in large quantities from New Jersey, excepting raspberries, which are too tender to bear transportation from a distance, and are therefore especially suited to our neighborhood.

Grapes are not so much in favor with the producer here as in former years, experience proving them very uncertain here as compared with the lake shores of New York State, which region supplies us very cheaply.

The profit or loss in farming or gardening depends somewhat upon soil, location, and other circumstances; but far more upon the character of the man who undertakes it. Accidents of the seasons, such as frost, hail, or tornado, may sweep away the profits of a single season; but, in the long run, prudence, industry, and well-directed enterprise will surely reap a fair return, while a want of these qualities just as surely works the ruin of the farmer or gardener.

Farming and gardening also should be regarded as a sort of trade, requiring for success a certain apprenticeship before one can expect to succeed in mastering its many details. In general those who are most skilful were brought up as farmers from their boyhood.

Discussion.

Benjamin P. Ware said that the essayist had alluded to the experiments in the manufacture of sugar from beets, now in progress in this country. The subject is one which he felt to be of great importance to the farmers of Massachusetts. It is important to understand the profit of the manufacture. He had been informed that the pressed pulp was of more value per ton for feeding purposes than the whole beet. The raw beet contains ninety per cent. of water, and the pressed pulp the same. It is said that the pulp is not pressed very severely, and if this is true it cannot be of much value. The success of the manufacture must depend very much on the value of the pulp for feeding, and he was not prepared to think it worth half as much as English hay.

Mr. Philbrick said that the pulp is so bulky after pressing that it will not pay for transporting long distances, but if the farmer when he brings a load of beets could carry back a load of pulp it might pay. He thought farmers would find they cannot afford to pay much freight on either roots or pulp.

O. B. Hadwen said that in the process of manufacture the beets are mashed and hot water is added. He had fed beets to cattle but had had no experience in feeding pulp. He thought three tons of pulp and one ton of hay might be equal to two tons of hay. The Lancaster farmers say that the freight of pulp is an obstacle to the success of the manufacture, and the true way is to have the factory near the farms where the beets are grown. He had no doubt that the manufacture would be of advantage to farmers, as it would open to them a wholesale market for their products. The interest of the farmers and factories should be mutual. The speaker thought that the appearance of the farmers and gardeners at the meeting indicated that there was a reasonable profit in their labors. Farmers here should cultivate such crops as the West cannot compete with.

Leander Wetherell spoke of a disease of beets in France, which had caused some alarm among growers. In that country most of the pulp is fed by the proprietors of the factories to large herds of cattle which they keep for that purpose. The cost of freight to any considerable distance would eat up the value of the pulp. The Chemist of the United States Department of Agriculture says that Indian corn and amber cane each gave a larger percentage of sugar than beets.

Mr. Ware said that owing to the cost of freight of beets and pulp the success of sugar manufacture must depend on the factory being in the midst of the farmers. The plan of the manufacturers, raising the beets and owning the cattle proved a total failure in the West. It requires thousands of acres, and a company cannot grow them successfully; it must be done in a small way. Extracting the saccharine matter does not lessen the feeding value of the beets much. The speaker supposed the pulp to be a concentrated article of food. The Chemist of the United States Department of Agriculture has told enormous stories in regard to sugar from Indian corn and amber cane. Professor Goessmann says it is impossible to make sugar profitably from amber cane, for it can only be made when the cane is in a peculiar condition which lasts but from ten to fourteen days, and a factory costing, say $100,000, cannot be allowed to lie idle a large part of the year.

J. W. Talbot said that the agent of the factory at Portland stated that he had the produce of from 2,000 to 3,000 acres of beets, and that he could afford to pay six dollars per ton for them. At Newburyport the average product of several growers in 1879 was twenty-five tons per acre; in other places it was much less. Five tons of beets make one ton of pulp, which sells for four dollars, and farmers bring in beets and carry back pulp. The crop must be rotated with others, taking only one crop of beets in three years, and hence 2,000 acres of beets presupposes 6,000 acres of land. Before a factory is established it is necessary to be certain that a permanent supply of beets can be procured. The speaker had no doubt that if properly managed the manufacture would be successful, but too many managers would cause failure. If Professor Goessmann's statement is true, that fertilizers will supply what is taken away by the beets, the necessity of rotation is obviated, but this is too sanguine a view to take.

Mr. Philbrick said that rotation is not necessary with beets in the same sense that it is with cabbages. Market gardeners pull their beets early, and he had known two crops taken from the same ground in one year.

Mr. Wetherell quoted Liebig's remark, that rotation is less desirable than the ability to raise the same crop year after year on the same soil; and said he hoped we might gain this ability. Onions were raised continuously on the same land for seventy-five years until the onion maggot interrupted.

Mr. Ware said that he might have misunderstood, but, that Mr. Bowker was his authority for the statement that in the manufacture of sugar, the beets are crushed or ground, and put in hot water, and that as much water was left in as there was juice taken out.

William C. Strong asked if so much saccharine matter could be taken out of the beets without lessening their value for feeding.

Mr. Strong, as Chairman of the Committee on Publication and Discussion, gave notice that the discussion would be continued on the next Saturday, with special reference to the Profit of Small Fruit Culture, and that Mr. Talbot would, at an early day, present a paper on Peat and Peat Lands. Also, that Dr. Sturtevant proposed to give facts which he had collected in regard to the Influence of the Stock on the Graft, and would be glad to learn such facts from the members present, or others.

MEETING FOR DISCUSSION.

SATURDAY, February 14, 1880.

A meeting for discussion was holden at 11 o'clock, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding. The subject assigned was a continuation of that of last week; "The Profits of Farming and Gardening in New England," with special reference to the culture of small fruits; but, before taking it up, Cephas H. Brackett, who had on exhibition some fine tomatoes and mushrooms, was requested to say something of his method of cultivating them.

Mr. Brackett said that he had about a hundred pots of tomatoes; the seed was sown in July, and he gathered fruit the last of December. Some of the pots were set on the ground and the plants rooted down into it, and these did best and continue to bear, but those in the ground did not produce as handsome fruit as those on the shelf. The plants are much shaded and run up so as to touch the glass, and every cold night the tips are frozen, which seems to benefit them, producing much the same effect as pinching. Some of his plants failed at the root, and those he cut down, and they bid fair to bear another crop. They did as well in six-inch pots as in nine-inch. He watered with Cochituate water directly from the

hydrant; some which were watered with pretty strong liquid manure failed first.

He made his mushroom bed with about eight inches depth of manure, and in about two weeks covered with two inches of loam. He did not cover it with straw, but left it exposed to the light. It was in a house with cucumbers, where the temperature varied from 40° to 90°, and partly under the cucumber beds, but not much shaded. He was sometimes successful, and sometimes not, but had never made it profitable. The price is sufficient, but the beds have not produced enough. He once covered the beds with straw. He did not put forth the method he had described, as the best, but merely such as it was convenient to him to practice. His cultivation of tomatoes was incidental to other matters, and if he were going to make a business of cultivating them, he would give them a warmer place, and away from the glass.

The Chairman said that he had had the same difficulty with tomatoes, which he sowed in November, as Mr. Brackett had experienced. The plants were in the same house with roses, and, at first, he thought it might be owing to smoking the roses, but afterwards concluded it was not. He believed now that it was owing to watering with cold water, for the tomato luxuriates in warmth, and cold water would check its growth. Later he watered with tepid water and the plants improved. There is no difficulty in the setting of the fruit, if we can avoid disease. When the plants were turned out, the pots were found full of vigorous roots, and he was not clear what the disease was; the roots might not be healthy when they appeared so. The temperature of the soil was no higher than that of the air in the house. He did not see the advantage of planting in beds; it would be cheaper, and the plants would be less liable to injury by watering with cold water, but it would tend to excessive luxuriance.

C. M. Hovey remarked that Peter Henderson says cold water does no injury, whatever, but it depends somewhat on what plant it is applied to. Mr. Knight said pineapples could be grown without bottom heat, and it can be done, but not to advantage. He did not believe that tomatoes could be successfully grown in a soil the temperature of which was no higher than that of the atmosphere.

William D. Philbrick said that when the temperature of the air varies from 40° to 90° in a bed without bottom heat, that of the soil

would range from 50° to 70°. He did not see how to get high soil temperature without too much expense for tomatoes.

Mr. Hovey said we shall fail if we undertake to grow tomatoes or orchids without expense. It is easy to regulate the temperature of a well-ventilated house, and the temperature of the soil could be made to correspond to that out-doors, which, in August and September, when tomatoes are ripening, is from 60° to 65° at night, when that of the air is 45°. Lettuce with high top heat, but no bottom heat, would damp off, and the trouble is probably the same with tomatoes. He planted tomatoes in pots in November, and potted in seven-inch pots, and trained to one stem. One was planted in the ground, and others were plunged, and at the time of speaking, all were growing freely, and were full of flowers. They are in the rose house, and the stems are eight inches from the pipe. He waters all but rare stove plants from the hydrant.

The Chairman thought it desirable to keep the roots of tomatoes warm, but not essential. Last year he succeeded finely, with care as to watering with tepid water.

Mr. Philbrick thought the trouble with the forced tomatoes was the same as had been seen in fields for the last ten years. The appearance resembles that of potatoes when they have been struck by rot.

The Chairman agreed with Mr. Philbrick, and thought it more apparent than at first that the trouble was not caused by want of bottom heat.

The Chairman called attention to a rose exhibited by him, which he had received from two respectable sources as the Oxonian, but was not sure that it was true. It is exceedingly floriferous; almost every joint seems to throw a bud. The Oxonian is described in the "Floral Magazine," Vol. XV., plate 219.

James Comley thought the rose shown by the Chairman was not the Oxonian; the petals are not cupped or smooth and even as in the true kind, which has two distinct colors and very short prickles.

The special assignment for the day, the Profit of Small Fruit Culture, was then taken up, beginning with raspberries. The Chairman called on O. B. Hadwen, Ex-President of the Worcester County Horticultural Society, for the views of growers in that part of the State.

Mr. Hadwen said that at Worcester the Northumberland Fill-

basket is highly approved. It is productive and profitable when well treated, and, though not of the highest quality, its form and substance make it desirable for market. He was uncertain about the Hornet; prize specimens which he saw here appeared to be identical with the Belle de Fontenay received from Mr. Meehan. Mr. Hovey had stated that the Belle de Fontenay had been disseminated as Hornet. The Herstine is giving good satisfaction, as are also the Knevett's Giant and Brincklé's Orange. The Brandywine is on trial. The Clarke and Philadelphia are desirable when hardy kinds are wanted. When the thermometer on high grounds indicates five degrees below zero, in valleys it will often be thirteen degrees below zero, and hence cultivators give different accounts as to hardiness.

Benjamin G. Smith said that of four or five kinds which he had cultivated as an amateur, the Franconia had been most successful. He had grown it for twenty years in the same place, and it continues as good as when first planted.

J. W. Manning had cultivated the Cuthbert for two years and found it a strong, vigorous grower; the flesh is firm and it ripens rather late. It is not remarkable for quality, but is a good market fruit. He had known the Hornet for fifteen years, and thought it and Belle de Fontenay identical. The largest berry he had ever seen was the Franconia; this variety has been known for more than forty years, and he questioned whether there had been any improvement in red raspberries in that time.

C. M. Hovey could recollect raspberries for forty years, and thought Knevett's Giant the best. The Philadelphia fruits so abundantly that it looks as if there was a bushel on a hill, but the fruit is so small that a boy after picking an hour could not get more than a gill. Dr. Brincklé raised twenty varieties, of which only the Orange is now cultivated. E. P. Roe, of Cornwall-on-the Hudson, exhibited some new varieties here, but they were not equal to the Knevett's. In answer to an inquiry, Mr. Hovey said the Knevett's Giant is a good bearer.

E. P. Richardson thought Mr. Hovey was rather too hard on the Philadelphia. A friend of his in Windham, N. H., who tried everything, discarded all but Philadelphia and Mammoth Cluster. The Philadelphia does not sucker badly, and is of remarkably fine color when canned, which is very much more attractive than the faded color of most kinds. The speaker thought the Hornet, Belle

de Fontenay, and Narragansett were all of the same family, and that they reproduced themselves from seed.

Mr. Hadwen said that the Knevett's Giant is a good bearer, but somewhat apt to crumble in picking. The Philadelphia is one of the best for preserving, especially when mixed with currants, and, though not of the high quality of Knevett's Giant, is desirable for those who will give it only ordinary cultivation.

The Chairman said that the Henrietta raspberry, introduced by G. H. & J. H. Hale, of South Glastonbury, Conn., resembles the Belle de Fontenay, but is worthless, and should have been described as it was. It is not prolific. The Pride of the Hudson is not worthy of introduction into New England or anywhere else. It blights in the sun.

Mr. Richardson said that the Herstine is very handsome, and of better quality than the Saunders. It is almost but not quite hardy; the tips are liable to be winter killed.

Josiah W. Talbot had plants called Hornet, which were thought by Mr. Hadwen and others to be Belle de Fontenay. One row bore as much as three of the Clarke. Where the Belle de Fontenay was killed to the ground, new shoots sprang up from the roots, which bore abundantly till frost. He had found the Herstine hardiest. He has given up strawberry culture and gone into raspberries, because the latter require so much less labor in cultivation. It is more work to pick and market them, but they bring better prices.

C. M. Hovey thought the Belle de Fontenay had been rather abused. It is hardier than an oak, and he could not get them out of his ground when they once got in. He set it down as not worth growing, but saw some in an amateur's garden, in September, under the name of Hornet, with stems four feet long, loaded with fruit, so that he could pick a quart from a few bushes. He procured plants and set them near his Belle de Fontenays, and they proved identical. As cultivated in that garden, it is as good a raspberry as one could desire. There were quantities of large fruit of fine quality, and the plants were hardy, but it is not the true Hornet. It makes many small suckers, which should be grubbed up.

The Chairman thought raspberry culture profitable for those who live near a market, because the fruit cannot be carried far. There is not generally a sufficient supply in the market.

Mr. Manning said that the fault of the Pride of the Hudson is that in a dry soil it sheds its leaves before the fruit is perfected. Mr. Roe, who sent it out, says that it will not succeed in the south or on dry soils. The quality of the fruit is good.

The Chairman had tried it on moist soils, and did not think it, or any variety which will not endure the sun, worthy of a place anywhere.

Mr. Philbrick said he preferred raspberries to strawberries, because he did not have to get down on his knees to pick and weed them, but he had not found them so profitable as strawberries. He had discarded the Clarke as uncertain, and was trying the Herstine.

Mr. Hadwen had grown raspberries for market and found them very profitable, but they must be well grown. When a plantation becomes old it is not profitable, and the grower neglects it. As with all other fruits, those who cultivate them well say they are profitable; and those who do not, say they are not profitable.

Mr. Hovey spoke of a fruit farm which he visited in England, where he saw a field of twenty acres of strawberries and another of raspberries of equal extent. There were, in fact, hundreds of acres in all, devoted to their culture. The raspberries were planted in rows, three feet apart, with five canes in a hill, and there were avenues through the field about one hundred feet apart. The canes were strong, and not a stake or a sucker was to be seen. Though the strawberries were not covered, they were not thrown out by the frost. The soil was a strong yellow loam, which would retain manure. This was in Kent, a county famous for raspberries and strawberries.

Aaron D. Capen had come to the conclusion that raspberries can be cultivated profitably, but as with all other fruits it depends on how it is done. Those who plant them in an orchard where the ground is in good tilth, as the Messrs. Clapp do with their currants, will be successful. At a late meeting of the New Jersey Horticultural Society, which the speaker attended, it was stated that strawberry growers used to think fifty bushels an acre a good crop, but one person in the southern part of the State said he had grown four hundred and twelve bushels per acre. The speaker thought he had succeeded pretty well when he got five thousand boxes per acre. A friend in Connecticut told him—and he believed the statement—that he had picked four boxes without moving. Some

have said that it would not do to manure too highly, because they run to vines; but the speaker thought they could not be manured too highly; the whole secret of success is in high tilth and generous manuring.

E. W. Wood said the question had been raised, how many strawberries could be grown on an acre, under favorable circumstances. He proceeded to state his experience, which, he said, might not be a fair test for all. He prepared a small piece of ground, which had been in grass and had produced three tons to the acre, by putting on a heavy coat of manure and trenching two feet deep. The plot was sixty-six feet long by sixteen feet wide, and was well drained. It was planted with Cutter's Seedling, Hovey's Seedling, and Boston Pine. The vines covered the ground, and he took from the plot over three hundred heaping boxes, which was at the rate of 12,000 boxes or 375 bushels to the acre. Under the same circumstances, but with other varieties, more could be grown. Mr. Wood spoke a good word for Cutter's Seedling, as one of the best varieties for family use. His plants stood from twelve to fifteen inches in height, and were so vigorous as to root in grass borders.

Mr. Wood mentioned the small fruit garden of William Doran and son, at Brookline, which was visited by the Garden Committee. The land was bought twenty-five years ago for twenty-five dollars an acre. The soil was a hard clay, with many stones, which were taken out with great labor, and the land was thoroughly drained. Though the owner is not particularly skilful or careful, this garden of less than two acres has, for the last ten years, produced from $1,200 to $1,600 in small fruits. Many farms of from one hundred to two hundred acres would not bring so much with much greater labor. The raspberries had not been replanted for fifteen years.

Mr. Manning said that he named and introduced the Cutter's Seedling. It was originated by the late B. F. Cutter, of Pelham, N. H. The speaker had picked three boxes of this variety without moving. The beds last longer without replanting than most varieties. In a soil trenched two feet deep it made runners eight feet long, and has produced seven thousand boxes of hulled strawberries per acre. In 1859 he brought fruit to the exhibitions of this Society for five successive Saturdays. He thought it the best strawberry for home use and near markets, but rather soft for distant markets.

Mr. Hadwen confirmed what had been said of the Cutter's Seedling. It is very productive, and is called for by his family and by all his neighbors who have tested it. The Newton Stock Club, when they visited his place, said they had never eaten better strawberries. He has grown strawberries since 1837, and tested many varieties, and Cutter's Seedling is the one that stands by. They must be picked at just the right stage, which is before they get dead ripe. It is valuable for the table and for near markets.

Mr. Manning said that at Andover no strawberry took so well as Cutter's Seedling. He thought there was not so much choice as some believed, between what we have now and what we had twenty years ago. The Early Virginia and Jenny Lind are small because there are so many berries. He had seen Boston Pines so large that two layers could not be got into a quart box.

The Chairman hoped the impression would not go out that we have made no progress in small fruit culture in twenty years. The Cutter's Seedling will not compare with the Charles Downing in value for general cultivation. There is also much improvement in raspberries. He hoped a great deal from the Cuthbert, and also from the Brandywine.

The Chairman announced a paper by Josiah W. Talbot on Peat and Peat Land and their Management, for the next Saturday, and that later, Joseph Tailby would open a discussion on the Propagation and Management of Hardy Roses.

BUSINESS MEETING.

Saturday, February 21, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, Vice-President John B. Moore in the chair.

William E. Endicott, Chairman of the Library Committee, read the following report on the subject referred to that Committee at the last meeting of the Society:—

The Committee on the Library, which, by vote of the Society on February 7th, was directed to report in what way the Library Room could be improved as a place for meetings and for library purposes, have given the subject a careful consideration.

The piece of furniture which now occupies the centre of the floor, and which was placed there without the vote of the Committee, is said to obstruct both sight and hearing when discussions are going on, and also to prevent the room from furnishing seats to as many as a room of this size ought to accommodate. These objections seem to overbalance the advantage gained in the storage of books by the substitution of the present piece of furniture for the table formerly in use, for the Society can in no way benefit its members and extend its influence more than by the discussions, which are now carried on under difficult circumstances.

The Committee therefore recommend, First, That the central table be restored to its former height and condition, except as regards the compartments provided for pamphlets, so that in time of discussions it can be removed to the adjoining room. Second, That to provide for the books thus displaced, and also many more which are now almost inaccessible, two bookcases, corresponding in appearance with those now here, be placed on the west side of the room.

In making the latter recommendation the Committee wish it to be clearly understood that if it be carried out the relief it will afford will be only temporary. The new cases would be nearly filled at once if all the books now thrust out of sight, or contained in the central cabinet, should be put into them, and there are yet nearly $14,000 to be derived from the Stickney Fund before it passes from our hands.

Our Library is unequalled in America in its particular line, and ought to take a high position among the special libraries of the land. As its excellence becomes more widely known, its advantages for purposes of study and consultation of authorities will be more highly appreciated, and, as this Committee has once before remarked, it will be greatly to the profit and credit of the Society if it shall be found in such a condition that its treasures can be put to the use for which all books are designed. That can never be the case as long as some volumes are in this room, some in a janitor's room, and some in a little closet up stairs. Granting that the books thus referred to are wanted not more than once a year, for that once they may be almost indispensable. Moreover it is eminently true of books that, to a person not remarkably well informed, out of sight is out of mind. If the books are where they can be *seen* the volume consulted once a year may be of service

once a month, and thus be increased in value twelve-fold. The Library, therefore, should be all in one room, and measures must soon be taken to that effect.

The Committee deem it their duty to again warn the Society that our books are not safe. The new locks have improved the condition of things somewhat; but when we consider the value of some books in the room frequently let with the hall, for the convenience of the small army of hangers-on accompanying every show, it is plain that we run a great risk of loss by theft or damage.

We hope, therefore that the request made in our last Annual Report, for authority to obtain professional advice in regard to library accommodations, may soon be voted on, and that the inquiry may be made to include other methods of meeting the wants of persons to whom the halls may be let.

For the Committee,

W. E. ENDICOTT, *Chairman.*

On motion of John C. Hovey, the report was accepted and referred to a special Committee, consisting of William E. Endicott, Charles O. Whitmore, and John B. Moore.

Adjourned to Saturday, March 6.

MEETING FOR DISCUSSION.

On the adjournment of the business meeting, a meeting for discussion was held, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding. It was opened by the reading of the following paper by the author, Josiah W. Talbot, of Norwood:

Peat and Peat Land.

Man, in his ruder state, subsisted entirely upon the spontaneous productions of the earth. His progress in civilization has probably kept pace with his progress in agriculture. When passing from nomadic life to the rude cultivation of the soil, he must soon have made improvements, and learned the use of manures. As population increased, and cities were built, these became more essential, and the same necessity has continued until now. But there is still room for improvement. The former wasteful and improvident

methods of farming here in New England and at the South, have resulted in many a worn-out and deserted farm and plantation. But we rejoice that improved methods of agriculture have recently demonstrated that there is still a value in these deserted lands. The old homesteads, around which cluster so many delightful associations, are as pleasant, and the lands are as remunerative to the owners of today as they were to our grandsires.

Many of the renovated farms are now producing better crops of grass and grain than the new lands of the West. The area of woodland in this State, which, for the last half-century, has been on the increase, is now diminishing; and, although the State may not produce one-tenth of what it might, still, I think there is progress. But I wish to call attention to the general neglect of our peat lands. In these are accumulated the almost useless and almost unknown vegetable deposits of unnumbered ages.

Professor Hitchcock, in his Geological Report estimates the peat lands in this State at 80,000 acres. Add to this the swamps and meadows, and what an amount of almost worthless land we have in our midst. A large part of this lies on streams and water-courses, which might be utilized for irrigation, and these lands might thus become intervals, the fertility of which would be unequalled in New England. But we must bear in mind that, even in intervals, where nature is most liberal, the land is not inexhaustible. Nature, when left to herself, seldom allows her lands to be impoverished; she annually returns more to the soil than she takes from it. But man takes all he can use, and sometimes neglects to make any return, and hence, our lands are impoverished. This will increase until we learn to compensate the soil for all that we take above the natural yield. If the farmer wants a bushel of corn more than his land will naturally produce, he knows that the application of a bushel of ashes will give it to him and his land will not be impoverished. The same is true of manure, and if the supply of this were inexhaustible, we could force our lands to yield abundant crops, without fear of exhausting them. Lacking this, we are compelled to ransack the animal, vegetable, and even the mineral kingdom for plant food. But in the light which chemistry has given us by analyzing plants and defining the elements of which they are composed, and the soils also—showing what they contain and what they lack in order to produce any desired crop—we need no longer work in the dark, as heretofore, but can understandingly draw from

all sources whatever we need. And in no department of agriculture is chemistry more useful than in its application to peat and peat land. These are composed principally of decaying and inert vegetable matter which chemistry teaches us to convert into the most desirable plant food.

While the estimates of the value of peat vary from a positive nuisance to the best of manure, it appears to me that a correct understanding of the nature and use of peat, would greatly modify these estimates, and enable many to act more consistently. Samuel W. Johnson, Professor of Analytical and Agricultural Chemistry in Yale College, in his little book, entitled "Peat and its Uses," has collected from the best authorities the most valuable information that has ever been published on the subject. "Peat," he says, "is the organic matter or vegetable soil of bogs, swamps, beaver meadows, and salt marshes, resulting from the decay of plants, as mosses, sedges, coarse grasses, and a great variety of shrubs, mixed with more or less mineral substances, derived from these plants, or, in many cases, washed or blown in from the surrounding lands."

But, in order better to understand the nature of peat, we need to bear in mind that, unlike the vegetable mould formed on the upland, it is grown, and its decomposition takes place *under water*. When vegetables on the land die, the oxygen of the atmosphere combines with the carbon of the vegetables, forming carbonic acid gas, which passes off in the atmosphere, while the remainder of the decomposed matter passes into the soil as vegetable mould, or humus. But the mosses and vegetables which grow under water to form peat, come in contact only with the small quantity of air found in the water, and decompose, or rather carbonize, very slowly. The carbon instead of being carried off in the air, as in the other case, remains in the stalks and roots of the plants in the form in which they grew, with all that would otherwise form humus; so that peat is humus carbonized and oxidized, and contains more nitrogen than the plants which formed it; and these qualities increase with age, so that old peat is better for fuel, or for a fertilizer, than new or later formed peat, but more difficult to decompose. It is a chemical compound, which chemistry teaches us how to reduce to its elements, in which form alone plants can use it as nourishment. Chemists agree that one hundred parts of good peat are composed of about fifty parts of carbon, forty parts of oxygen,

eight parts of hydrogen, and two parts of nitrogen, with a small quantity of mineral or earthy matter, all of which enter into the composition of plants. In the moss peats, these elements are retained in the form in which the mosses grew, almost as perfectly as in decayed wood, and when first taken from the bog it is little better fitted for plant food, than rotten wood. Both, to be available to plants, must not only be disintegrated, but thoroughly decomposed by unlocking the chemical compounds in which the elements are combined. When just from the water in which it has probably lain for thousands of years, if broken up, it will *slowly* decompose, just like dead vegetables, the oxygen of the atmosphere combining with the carbon and forming carbonic acid; the nitrogen in the peat uniting with hydrogen and oxygen and forming ammonia which passes off with the carbonic acid, while the remainder is humus. Thus, in time, the whole of peat is reduced to plant food. But this process of years may be reduced to days, or weeks at longest. Bring this green peat in contact with lime, potash, or some other alkali, or with green manure, or even with green vegetables, and as soon as heat is generated, decomposition commences. Let these be properly composted, and the carbonic acid and ammonia which would otherwise escape will be retained in a heap of highly concentrated plant food.

In addition to this, the acid in the peat, which frightens so many, and which is generally sulphate of iron, in the form of copperas, will be absorbed by the lime, forming plaster of Paris, another good fertilizer; or if it is in great excess, will form an insoluble salt, which is perfectly harmless in the soil; or which, meeting with other chemicals in the soil, may become useful in turn. Thus, we find nothing in good peat which may not be easily converted into good plant food.

But the strongest objections to peat have arisen from the improper use of it. Take the best of peat right from the water where it grew, and put it in its organized form into wet land, where it will have free access to water, and it will probably remain peat the next thousand years—as useless to vegetation as so much stone. Or put it upon any land before it is decomposed and it will remain useless a long time. Or put it upon land which has already more vegetable matter than animal manure or alkali to utilize it, and it would be an injury. Such land might, with some propriety, be said to be mucked to death. But, on the other hand, there is much

sandy land, nearly exhausted of humus, or vegetable matter, that would be benefited by good peat in almost any form. It certainly would make it retain the moisture better and prevent it from leaching so badly, and if there is potash or alkali enough in the soil, or if animal manure is applied, it will be improved by it and become fertile. But if the peat were decomposed before putting it upon the land, it would be better still, producing the same mechanical effect, and benefiting the crop at once. Even clay lands are essentially benefited by being mixed with decomposed peat.

But what do chemists say of peat as a fertilizer? How does it compare with other fertilizers? Take cow manure as a standard, and how will it compare? The latter is well known, for it has been most thoroughly analyzed by the best chemists and they all agree in the results. Now these same chemists have as carefully analyzed peat, and assure us that if they add a little potash, phosphate, and sometimes a little nitrogen, when thoroughly decomposed it cannot be chemically distinguished from decomposed cow manure, and the effect on vegetation is precisely the same. Now, if this is true, and it certainly is substantiated by the practice of many farmers, who have been using it in this way for years, and who assert that they could not carry on their farms were it not for their peat, may it not be possible that we have been paying out great sums for fertilizers when we could have prepared them ourselves, equally good, with very little expense?

But, thus far I have spoken of peat to be used on the upland, rather than of peat land. Can our peat lands be made valuable? In many places, they are already the most productive lands we have, and their fertility can be continued with much less expense than that of the upland. One reason for this is found in the fact that there can never be any lack of vegetable matter. When the surface is exhausted, we have only to plough deeper and bring up a new supply. All that is needed on such land is the chemicals, which, with the atmosphere, the sun, and the rain, will decompose this inert vegetable matter, and convert it into plant food. It is possible that more silex may sometimes be needed, but there is nothing cheaper than sand or gravel. A very small part of the cost of fertilizers for the upland will supply this.

But how are these worthless bogs to be changed into such fertile lands? The first thing is to manage the water. We are to remember that peat was formed under water, and it will be nothing but

peat so long as it remains there, and, as such, is worth no more for agricultural purposes than so much rock. It is plain, then, that it must be properly drained. I say, *properly*, drained; there are two extremes in draining. Land may be too dry as well as too wet; and this is especially true of peat land. But there is a peculiarity in peat lands which I have never seen noticed, and which, I think, has an important bearing upon their drainage. In most soils, the water channels run horizontally at different distances from the surface. In peat swamps the circulation is principally at the bottom. I come to this conclusion from the manner of their formation. When the stream, in the valley where the peat now is, was first obstructed by logs, or by the beavers, and a pond was formed, the moss, and other vegetables, came up around it, and slowly extended over the surface, until it became a meadow, or swamp, with the water flowing freely underneath. These mosses and plants having gained a foothold on the water, have continued their growth for thousands of years, gradually filling up the valley with their peat deposits. In many instances, these deposits rise and fall with the stream, and in some instances, in ponds, float about. The rains which fall upon them settle in the loose mass to the water beneath. This would keep open the water channels from top to bottom, and not horizontally. In addition to this, the mosses which form the peat have a continuous growth for centuries. Death follows up from the bottom. Instead of breaking up as most plants do, by decomposition in the atmosphere, these never come to the atmosphere, but slowly decompose, or, rather, carbonize, in the place and the form in which they grew. The stems, dying much like the old heart wood of trees and running from the bottom to the top, form a complete set of capillary tubes, through which the water circulates like the sap in the pores of wood. These tubes are full of water as long as there is water at the bottom; hence we find peat, which has not been removed from its bed, always full of water. Now the question arises whether it is desirable to drain this to the bottom by cutting off the springs that feed it. All vegetables want water, and some roots will go down twenty feet to find it, but they would never go to that depth if they found water sooner. Grass and corn roots will go down five or six feet for moisture, but they would not if they found water enough above. They do not find humus there. They can find very little carbonic acid there, for there is neither carbon nor oxygen there to

decompose it. What gain then arises from obliging the roots of trees and plants to go down so deep for water when we can just as well give it to them nearer the surface and in close proximity to the soil which we cultivate and manure? In peat land this can be easily managed.

But if peat land is so rich in plant food, why are peat bogs so barren? For the same reason that rotten wood will not sustain vegetation. Peat, like rotten wood, is an organized mass, and is worthless until it is disorganized and decomposed. It is a compound chemically locked up, and unless brought in contact with something that has a stronger affinity for one of its elements than they have for each other it will remain peat forever, affording no nourishment for plants. But why is the mould taken out of a hollow tree such good plant food? Because it is thoroughly decomposed and readily yields the elements plants desire. So of peat; break up the organization, thoroughly decompose it, and there is no better plant food. Now apply this to peat land. While the water passes up so freely through this organized, capillary mass of peat, the peat remains in its own element; but break up this organization with a plough, cut off these capillary tubes as far down as you wish to cultivate—that is as deep as you wish your plant roots to grow—stir it up thoroughly, put in potash or some alkali or animal manure if you have it, and set this mass to fermenting—let the air into this mass of carbon and fill your ground with carbonic acid—put in something that will change the two per cent. of nitrogen found there to ammonia, and it will be in the soil just where you want it; and leave the organized peat below for a subsoil to draw up the water for your plants, so that they will not be obliged to spend half the growing season going down six feet for water—do this thoroughly and your peat lands will be the pride of your farms. Of course the surface water must be removed and kept down just so that your land will never suffer from drought. I am told that such land is the last to suffer from this cause.

When peat lands are on streams where the water can be used for irrigation what intervals they may be made. Take for illustration the 4,000 acres of peat land on the Neponset river, in our immediate vicinity. This large tract is now rendered almost worthless by the dam of a single paper mill which might be more efficiently driven by a twenty horse-power engine. The never-failing stream which passes through the meadow could be made to

irrigate the whole in the spring, and by the roads already built across the meadows at different intervals, with proper gates at the bridges, the water could be made to fill the ditches or flush over the land on one section after another, even in the dryest season, so as to completely protect it from drought, and this beautiful interval would become the garden of the metropolis.

If the value of these lands is doubted, go out to the Blue Hill farm, in Canton, owned by Mr. Wolcott, and he will show you an acre and an eighth in the higher part of this meadow, on which he cut six tons of good hay the present season, with less manure than would suffice for half an acre of upland. Or go in the autumn, and on land where, four years ago, they were obliged to pole off a light crop of coarse hay and bushes, he will show you a crop of celery which will do your eyes good to look upon. Or go to a section of the meadow near the stone factory and examine a piece, where, for the last forty years, the owner has annually taken three crops of grass for his cows, and the land is still as good as new. Or go to Norwood, and on a piece of meadow eighty rods from the shore, and cultivated only two years, witness Hungarian grass, breast-high, and other crops equally promising, and you will come to the conclusion that there is no discount on peat land, where you can control the water.

Now, in view of these facts, and of such results, I would ask if it is good husbandry to allow 80,000 acres of peat land in Massachusetts to remain almost wholly unproductive?

Discussion.

The Chairman remarked that the subject of the paper is of great interest, and he wondered that it has not excited more attention.

John B. Moore said that he had had some experience with peat lands. He has plenty of such land of his own. Supposing there are 80,000 acres in the State, as Mr. Talbot had said, he did not believe it is all capable of improvement. In lands composed of spongy peat, and having the water within a foot of the surface, and where a fall of only two feet more can be obtained, if you reduce the water two feet, the peat comes down like a sponge, being compressed by its own weight. He said this, not to discourage improvers, but to warn them to be sure, before beginning, that they have fall enough. Solid peat, such as is used for burning, does not settle so much. If it is desired to grow grass on

peat lands, enough sand must be put on to furnish silica, if it has not got sand from the upland. But the richest peat soils cannot continue to produce crops forever without manure.

Mr. Moore spoke of a gentleman who bought twelve acres of land and divided it into twelve lots, by posts painted and numbered, to experiment with fertilizers on different crops. He first gave the land a dressing of from one hundred to one hundred and fifty loads per acre of peat, which was unfortunately impregnated with some deleterious ingredient—perhaps sulphate of iron—and, though it was thirty years ago, the land has not got over the injurious effect of it yet. Perhaps the deleterious quality might have been corrected by lime. The speaker had no doubt that good peat is beneficial to sandy land, as it retains moisture and furnishes decomposed vegetable food to plants. It is also good for pretty heavy soils, which it lightens. He studied Dr. Dana's "Muck Manual" many years ago, and believed his analysis of peat, from which it would appear that by the addition of a few ingredients it can be made equal to cow dung, but the crops did not believe it, and he had to give up. Yet the analysis is no doubt correct. Professor Goessmann will tell you there is much potash in certain rocks, which the chemist can obtain by dissolving them, but plants cannot. Chemical analysis will show what is in the soil, but it will not show what the plants can get. No chemist, with all his knowledge, has ever succeeded in compounding a fertilizer equal to stable manure. The same substances in a chemical manure do not produce the same effect. He would not underrate chemists, but Professor Goessmann would say precisely the same thing. There is something in nature beyond the chemist—something that we cannot account for. Professor Goessmann says he cannot tell what a farmer has got in his soil so well as the farmer himself. As an absorbent of the fertilizing liquids of the farm-yard, dry peat is more effectual than dry clay, which again will absorb more than sand. It furnishes both food and moisture to plants. It may be desirable to improve an unsightly bog near the house, even if it does not pay as a farming operation. But before undertaking any such work for profit, be sure there is sufficient fall for drainage, especially if the peat is deep. Mr. Moore had seen a meadow twenty-five feet deep.

Mr. Talbot said that when he advised the application of peat to land, he qualified the recommendation by saying "good peat."

That of which Mr. Moore spoke as producing such lasting injury to the land, was not good. The speaker said that good peat would be beneficial in any form, but it would do much more good if decomposed than if not. There is difference in decomposed peat, and he believed that some, with chemicals added, is equal to cow manure. He did not see what difference it made whether plant-food came through the animal, vegetable, or mineral kingdom.

Benjamin P. Ware said that he would add something, not in the way of theory, but of practice. He had had a great deal of experience in preparing manurial substances from peat. When freshly dug, peat contains a great deal of matter which is not in proper condition for plant food; it is inert and must be changed. He had observed wonderful results from composting. He digs peat in August and allows it to drain and afterwards to be mellowed by freezing. Then he mixes equal quantities of peat and sea manure, such as kelp and other sea plants, which produce a very rapid fermentation, and the whole becomes equal to horse or cow manure, cord for cord. Horse dung is equally as good as sea manure to produce fermentation. He had seen very beneficial results from the application of such a compost.

In regard to the value of reclaimed peat lands Mr. Ware thought there could be no question. He knew a pond of five acres, surrounded with peat land overgrown with blueberry bushes and cut into ditches where peat had been taken out for fuel—the whole making a nuisance and an eyesore. The outlet ran over a gravel bank, which was cut through so as to lower the water three feet, and the swamp settled eighteen inches. The bushes and hassocks were cut up and thrown into the pond, making more land. In winter gravel was hauled on, and in the spring potatoes were planted. The ground was afterwards laid down to grass, and with top-dressings at intervals of three years it produced for nine years two crops a year of five tons in all. It then began to fail and was broken up, and with the same top-dressings has been good nine years more.

Mr. Ware knew a flat meadow of two acres which was so soft, even after being drained, that it could only be ploughed by keeping the team on the upland and carrying the plough back by hand after ploughing a furrow. The first crop was mangels, which more than paid for all the expense of reclaiming, and last year it produced more than four tons of grass per acre. The level of the water was

reduced three feet by draining, and water brought in at the inlet was carried away by a box-drain entirely under ground, and now it is the most productive land on the farm. He could mention other instances, but these two prove that where peat lands can be drained they are the most valuable part of the farm for grass crops. Peat is not manure in itself any more than raw hide is leather, but by proper treatment it becomes manure.

In answer to an inquiry Mr. Ware said that he did not think the grass from these meadows is as good as that produced in smaller crops on warm upland, ton for ton. It is coarse, but it is as good as any grass where such large crops are produced, and it will sell for as much as any, especially in Boston, where coarse hay is preferred.

Leander Wetherell thought Mr. Ware was incorrect with regard to Boston market. Buyers there have found out that hay grown on the Sudbury meadows is not so nutritious as that from dryer soils. He thought that all hay above a ton and a half per acre is got at the expense of quality. Neither of the gentlemen who had preceded him had given a definition of peat which would enable him to go out and select a peat meadow, if he wished to purchase one. Good peat, when dug out, will become as mellow as old manure. He had dug decomposed peat in August and let it remain till May, when he put it on an old cultivated sandy soil, and there was very little difference between the crop of corn thus produced and that grown alongside with good manure. He knew a bog where the mud was shallow, which was drained to the bottom and planted with potatoes, and though the crop was not large it was very early, and paid all expenses of draining. In Hadley is a swamp which sold for five dollars per acre; the owner drained it by cutting through a gravel bank twelve feet deep, and planted with broom corn and tobacco, and it brought better crops and more rent than the best tobacco lands on the Connecticut river. On the other hand there is in Sherburne, Franklin County, a large swamp, thoroughly drained and gravelled, which has never produced any return and is now abandoned. The trouble is undoubtedly the settling of the swamp from the weight of gravel.

Mr. Moore said there was some confusion among the gentlemen who had spoken, as to what peat is. Mr. Wetherell had spoken of peat which became mellow, but fuel peat will dry as hard as a brick, and it is best to dig it in autumn and expose it to the frosts of

winter, which will tear it to pieces. He had dug out of the hollows between hills a material resembling leaf mould, which did not appear to have any acid, and he thought the peat with which Mr. Wetherell produced so good a crop of corn was probably a vegetable mould like this. Four cords of spongy peat will rot down to one, and between this and fuel peat there are all gradations. Near upland the deposit in swamps consists largely of sand which has been stained black. Pond mud is almost all black sand.

Mr. Wetherell said that in speaking of valuable peat he referred to that which is thoroughly decomposed. He knew a bog of a hundred acres with no sand, but mud which would adhere to your boots. There is much peat land in this neighborhood which is well adapted to growing celery.

The Chairman said there was a large tract in Newton which he had advocated taking possession of for a park.

Mr. Talbot asked attention to the question how deep it is desirable to drain land.

It was voted to continue the discussion of the subject on the next Saturday.

MEETING FOR DISCUSSION.

SATURDAY, February 28, 1880.

A meeting for discussion was holden at 11 o'clock, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding. The subject assigned was "Peat and Peat Land," continued from the preceding Saturday, but before taking it up there was some discussion in regard to the "Tailby stock" for roses, and on other subjects. Flowers of the Tailby stock were shown by Mr. Tailby. In a discussion last year* this was pronounced the Madame Sontag rose, but the impression of Mr. Tailby was that it was different.

Charles M. Hovey thought the point was not of sufficient consequence to discuss. The stock has no distinguishing merit, and he did not think it very valuable. It is tender. It may be a seedling. Madame Sontag is reputed to be a fine rose.

---

*Transactions for 1879, Part 1, page 89.

The Chairman remarked that there might be a difference of opinion as to the value of the stock, but whatever the value we like to settle the identity of varieties.

Mr. Hovey said that from 1842 to 1855 Mons. Vibert raised an immense number of roses, of which this might have been one.

The Chairman spoke of the peculiarities of the present season, and said that notwithstanding its mildness many of his roses had been killed.

John B. Moore suggested that many roses did not have the wood well ripened, and that such ones might have been killed early in the winter.

Mr. Hovey said that some contend that trees never freeze, and he thought that under certain conditions they never do. Starch does not freeze. At Verschaffelts' nursery, at Ghent, Nordmann's spruce was killed to the ground, and nearly all conifers suffered by the severity of the winter, and rhododendrons were killed by the thousand. By the 6th of December the thermometer was from one to eleven degrees below zero. It was the same in England. It is not the degree of cold, but the condition of the tree, which causes injury. When the sap has been changed to sugar, gum, or starch, the cells are not distended by freezing, and plants are not injured. Some camellias which he left out-doors were not injured until the mercury fell to 8°, and were not killed until it fell to 4° below zero, and then the roots survived, but they had snow over them. He had never known any thoroughly hardy trees killed, but some years ago he had trees injured by being whipped about and broken. He agreed with Mr. Moore that the roses were injured about the 18th of November. The shoots were blackened at that time.

J. W. Talbot said that after a season, when he was a boy, when all trees were in vigorous growth in October, the Baldwin apple trees were nearly all killed. Any one who has chopped timber in winter knows that trees will freeze.

The Chairman said that he had accounts from Orleans, France, of great injury to trees there.

Mr. Moore confirmed what the Chairman had said of injury to trees in Europe, and what Mr. Talbot had said of the freezing of trees. Pine wood becomes so brittle that it will fly to pieces if you try to split it when frozen.

The Chairman said that you can see the frost in the wood.

E. W. Wood remarked that the wood of his Hybrid Perpetual roses looked well.

James Comley said that roses grown in pots in the summer, and put in a barn cellar early in autumn, had produced good crops of flowers, but those left out later had not done so well. Those not frozen have done as well as ever, but those frozen have not borne half a crop. To be successful year after year, they should not be frozen. The half-hardy rhododendrons, which are commonly left out as late as possible, had the buds frozen last year before they were housed for the winter. Anthony Waterer said that in forty years he had never seen such destruction among half-hardy rhododendrons as this winter. The speaker was satisfied that frost does freeze sap.

The Abel Carrière rose, which was exhibited by him, forces very freely and comes very large. It is as good for forcing as the Gen. Jacqueminot. He recognized the flower of the Tailby stock, but did not recall the name of the variety. He was acquainted with the Madame Sontag rose, and the flower is three times as large as that of Tailby's stock.

John Robinson quoted from the "California Horticulturist," a statement in regard to B. B. Redding's orange orchard, that when the trees were watered late, ten per cent. were injured by the winter, but when watering was discontinued earlier in the season, the injury was very much less.

Benjamin G. Smith, said that his rhododendrons, andromedas, and kalmias, never looked better. He mulches them very heavily with forest leaves. His Hybrid Perpetual roses were also looking well.

The Chairman thought that most stocks would come out in the spring uninjured. He had a row of plum stocks in low land, which grew very rank, and were much killed.

The subject assigned for discussion was here taken up, and the Chairman called on Edmund Hersey, who said that it covered a wide field, and to talk intelligently upon it might require a definition of terms. If we look up authorities, we shall find that the term "peat," includes matter in all stages of decomposition, but he should confine himself to the common acceptation. Peat meadows were once ponds, round the margin of which moss grew. Many of these ponds are now so deep that the moss has not yet grounded. The coarser grasses spring up on this decaying moss, and, these also decaying, both together form what is often called

vegetable mould, but what authorities call peat. Few plants penetrate to the bottom of the peat, but the skunk cabbage does, except where it is very deep. The speaker had seen the stumps of pine trees four or five feet in diameter, cut a hundred years ago, which grew on a little mound of soil in a meadow that is still afloat in places. Such meadows have "breathing holes," where you can sound to the depth of twenty feet, or more. He exhibited a specimen of peat which had grown within forty-five years in the manner described, and would, eventually, form solid peat.

What shall we do with these peat lands? There are hardly two meadows alike, and every farmer must study his own meadow. Some meadows have been partially drained in order to dig peat for fuel, but coal was introduced, and the peat was not dug. Meadows settle as the peat decomposes. The speaker thought that most meadows would settle down one half the depth above the drainage. Meadows already partially decomposed are more valuable than raw peat meadows. The first thing to consider, when it is desired to reclaim a meadow, is whether it can be drained sufficiently. If it can be drained, the owner would be justified, after the top has settled, in putting it into English grasses. There are thousands of acres of meadow in Massachusetts which can be drained, and other thousands which cannot be. The latter the speaker considered most valuable. They should be planted with cranberries. He had had experience, on a small scale, with this crop, during the last twenty-seven years, and believed it to be, after Indian corn, one of the surest of crops. Even on land not naturally adapted to it, it is more profitable than the apple crop, giving the farmer ready money without much expenditure for manure or labor. The work of preparing the meadow can be done largely in winter, and more money can be made on it than on grass. He would not advise to plant all cranberries, but he would encourage any one who has a meadow where he can command the water, to try; but he must go to work the right way, and must select the best and most productive varieties.

Dr. E. L. Sturtevant said he had carefully observed the growth of the cranberry, and thought the soil had less to do with its productiveness than is generally supposed. In a cut ten or fifteen feet deep, on the Milford Railroad, he had seen cranberries growing in gravel and bearing fruit while they were destroyed by drought in a meadow near by. In reclaiming a peat meadow it is important

to consolidate the soil, either by gravel, maul, or wheels. He had noticed that the most productive portion of the meadow was often in cart tracks. It is important not to draw the water too low, for in dry seasons peat meadows suffer more than any other soil. He never knew peat to become cultivable until it took on the character of loam. The presence of angle worms indicates that it is approaching the desired condition.

J. W. Talbot said that as long as peat remains in its original condition, it is useless. It never will decompose if covered up, and as long as the circulation continues up and down (as described in his paper last week) instead of horizontally, it will remain peat. There is a great difference between the results of decomposition in the air and in water; in the latter case peat carbonizes. There is more carbon in old than in new peat; a piece of old peat has laid on the top of a wall for twelve years without decomposing. Something is needed to break up this compound and bring it into the condition of vegetable mould or humus. Mr. Hersey had spoken of meadows that could not be drained, but the speaker advised those who might attempt to make a cranberry meadow, not to waste time on land that could not be flowed as much as was desired. In his own meadow he took off the water in April when he should have left it on until May; he had lost the crop four years out of seven by taking the water off too early. He thought the spring flowing the only one that does any good; it keeps the plants back.

John B. Moore said that he once thought of going into cranberry culture, but before doing so he went down on Cape Cod and looked into the subject thoroughly, travelling over the Cape on foot. The conditions for this crop are not right in one meadow out of two hundred. There are two insects which are very injurious to it; one eats the vines in June; the other gets into the fruit in August. Neither of them can be destroyed except by flooding. If the water stands on the vines in a warm day in summer the fruit rots, and therefore the water must be let on and drawn off very quickly. Away from the sea-coast, cranberries are liable to injury by frosts in autumn, from which they can be protected only by flooding, and the water must be drawn off the next day. Mr. Moore said that he came back from the Cape wiser than he went.

Mr. Hersey thought Mr. Moore was deceived by persons who were afraid of his competition. They threw a good deal of cold water on him. Cranberry culture is not so difficult as Mr. Moore's

remarks would imply. The speaker had grown good crops on strawberry land. He admitted that there are insect enemies to the cranberry on Cape Cod, but these are not found everywhere. The "fire worm,"* which injures the vines, is not found in Hingham, and the "curculio" or "cranberry weevil"† need give no trouble if the land can be flowed two feet deep in winter. The cranberry will stand more drought than any other plant he knows, but there is one place where it cannot be grown, and that is where it is wet all the time. They must have three months of dry weather. His little experiment in cranberry culture was on land that could not be flowed, and there the crop was more certain than Indian corn. He had taken out peat and put in three feet of clean sand, and in twenty-seven years had had only two failures of cranberries there.

Dr. Sturtevant said that on a gravel bottom he got cranberries four years out of six; the other two years they perished with drought.

John Robinson said that the best crop of cranberries he ever saw was in a depression between the dunes in the sand on Plum Island. They were among moss, which kept the ground moist.

E. H. Hitchings said that the best cranberries he had ever seen were by the side of the New York and New England Railroad, in Dedham, where the peat had been dug out and gravel was left.

J. W. Manning had seen them flourishing in a very deep cut on the Boston and Maine Railroad. David Perham, of Chelmsford, took four bushels from a square rod in a wet, mossy meadow, which was capable of being plowed, and in some spots was very favorable to their growth.

Mr. Talbot spoke of a favorable report which he had heard of their success for some years on upland in Peabody, but the ultimate failure of the experiment showed that something was wanting. Cranberry growers do not want the roots to strike peat.

Charles M. Hovey asked whether cranberries will grow on upland generally. In Sandwich, Mass., in preparing for them, the peat is invariably covered with sand from an inch to an inch and a half in depth; but if it is covered three inches deep, there will be but few cranberries.

---

* *Anchylopera vacciniana.* See Packard's Guide to the Study of Insects, page 338.

† *Anthonomus suturalis.* Packard, page 487.

Dr. Sturtevant said that the cranberry is not necessarily a peat plant, but a peat plant through circumstances. It grows in peat meadows, perhaps, because the snow and water lie there. He had seen it fruiting heavily in pure sand, but it will not grow in pure peat. It must have winter protection, and he had placed boards around them in his garden to keep the snow on. He had grown it in the greenhouse.

Mr. Talbot said that the analysis of peat ashes shows a small quantity of mineral matter, which chemists say is of but little value. Ira Gill, of Walpole, took the peat ashes from his hat factory and applied them to a barren knoll and it became fertile. He attributed the increase in fertility to the peat ashes.

Mrs. H. L. T. Wolcott said that she had been interested for two years in reclaiming peat lands. She had found no decided difference between peat and muck. Mr. Talbot had stated that muck decomposes, while peat will not. She exhibited a specimen taken from a ditch three feet deep, in contact with clean sand, and wished to know whether it was muck, or ever would be.

Mr. Talbot said that Professor Johnson had defined peat. There is a distinction between that formed from grasses and that formed from sphagnous mosses. Sometimes leaves work in. Peat is fibrous, the fibres running from bottom to top. The substance spoken of last week by Mr. Moore, as having been dug out of the hollows between hills, is not peat, but muck.

Aaron D. Capen said there is as much variety in what is called peat as in the soils of the United States. The grades vary from simple mud to the best muck or peat. The specimen taken by Mrs. Wolcott from over a substratum of sand is very different from that spoken of by Mr. Talbot in bogs which settle a foot when drained. In 1835 or 1836 the speaker reclaimed a meadow where the herd's grass grew up to his chin the first year, and up to the top of his head the next.

Benjamin P. Ware said that his experience did not show much value in peat ashes. In clearing up meadows he had gathered and burnt many hassocks, and spread the ashes on grass upland, but it did not increase the crop of grass.

E. P. Richardson's experience had been the same. Peat ashes were of little, if any, benefit to potatoes.

Mrs. C. N. S. Horner said that in the northern part of Essex county, the distinction made between peat and muck or mud, is

that the peat will burn, while the muck or mud will not. She knew an instance where peat ashes were spread on land forty years ago, and whenever potatoes have been planted there since, they have been so rough as to greatly lessen their value.

Mr. Talbot said that old peat contains fifty per cent. of carbon, and will burn, but if thoroughly decomposed it will not burn; the carbon is then gone and the humus is left. He thought Mrs. Horner's distinction a good one. Peat leaves a very small quantity of ash, and muck seventy-five per cent. of ash.

Mr. Moore said that in Ireland the top of land is pared off and burnt that the ashes may fertilize the soil, and the top of bogs is burnt here.

Mr. Talbot said that on the top of peat meadows, the hassocks are often from seven to twelve inches deep, and this vegetable matter makes very valuable ashes, which gives the heaviest crops of herd's grass, but if the peat is thoroughly decomposed it will not burn. When peat meadows take fire, they do not always burn down to the level of the water.

Leander Wetherell understood the difference between peat and mud to be that the latter is more thoroughly decomposed, so as to be in the condition of paste. Dr. Dana says, that peat ashes abound in carbonate, sulphate, and, especially, phosphate of lime.

Mr. Talbot said that what others had stated in regard to the burning of peat meadows, did not conflict with his statements; only the fibre is burned.

Mrs. Horner said that in digging peat for fuel, the topping knife is as important as any tool. Sometimes only a few inches is removed before reaching the fuel peat, and sometimes as much as a foot. Does not Dana say that the bottom of the peat meadow is often an imperfect peat?

Mr. Moore said that he had cut hundreds of cords of peat, and the reason that the top is thrown aside is not that it will not burn, but that, as low as the frost has worked, it is so pulverized that it will not hold together.

Mr. Talbot said that in such cases the peat on top is only disintegrated and not decomposed. To decompose it requires chemical action.

The Chairman gave notice that on the next Saturday, Dr. E. L. Sturtevant would present some carefully collected instances of the Influence of the Stock on the Scion, and *vice versa*.

BUSINESS MEETING.

SATURDAY, March 6, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, Vice President, John B. Moore, in the chair.

WILLIAM H. HUNT, of Concord,
was elected a life member of the Society.

The meeting was then dissolved.

MEETING FOR DISCUSSION.

At the close of the business meeting, a meeting for discussion was held, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding.

The subject assigned was the "Influence of the Stock on the Scion and *vice versa*," and was opened by Dr. E. L. Sturtevant, who said that he should feel diffident in coming before the Society with a paper on the subject, but for the deep interest in the discussions a year ago, which appeared to be greater than had been felt in any other subject, and the widespread interest shown by the unusual number of calls for the TRANSACTIONS containing the report of those discussions.

Dr. Sturtevant said that it seems to be admitted by many of our best botanists and leading pomologists, that there is a reciprocal influence between the stock and the scion, but to what extent this influence is exerted, its boundaries, and the conditions under which it acts, does not, at present, appear to be well defined. The influence of bud variations, of cross fertilization, and of graft hybrids, is not in every case distinguished from the effect of the graft and stock upon each other, and hence a confusion. It, therefore, seems proper to bring together all the asserted cases where the stock has influenced the graft, and *vice versa*, in order that the evidence for making up our minds may be more fully under our observation.

Dr. Sturtevant expressed the opinion that it is in the power of the skilled gardeners and accurate observers, of whom there are so many among the members of this Society, to do much towards giving a scientific character to our TRANSACTIONS, by aggregating

their individual observations. If once the habit were established, of each one, as circumstances permitted, offering to the Committee on Publication, an account of each case of bud variation; of each case of influence of graft on stock; of each case of monstrosity, or of unusual variation, etc., in the course of the year the mass of material would be sufficient to form a publication valuable to science and honorable alike to the contributors and the Society.

Dr. Sturtevant then proceeded to read the following instances of the effect of the stock on the scion, and *vice versa*, which he had collected, with the assistance of the Secretary of the Society, beginning with those relating to the Influence of the Stock on the Scion:

Paul Dudley, F. R. S., who resided at Roxbury in 1726, spoke of a Bergamot pear tree, from which a scion was taken and grafted into a common hedge pear, but the fruit did not prove so good as the original, and the skin was thicker.—*Phil. Trans., abridged, Vol. VI, Part* 2, 341.

In 1850, A. C. Hubbard, writing from Michigan, said, "a neighbor of mine, who is a very close observer, took scions of the Esopus Spitzenberg apple and grafted over a tree which had previously been grafted to some other variety. The fruit from this tree far surpasses any other Spitzenbergs he raises, in flavor."—*Pat. Rept.* 1849–50, 282.

B. Hathaway, a nurseryman and fruit grower in Michigan, writes, "The result of my own observation and experience goes to show that the stock has an influence in determining every characteristic of the fruit. Although not always appreciable, it is often so strikingly manifest as to leave no room for doubt. . . . I have a Northern Spy on Greening, and this tree alway gives me my largest specimens for the fairs, though pale in color; while two trees close by, grafted on Esopus Spitzenberg, always give fruit highly colored, but never so large." He also states that he has ten root-grafted Northern Spy trees on which the fruit is always alike, and forty other Spy trees on large seedling stocks on which the fruit is constantly and markedly varied.—*Ag. of Mich.*, 1871, 139, 140.

Two instances are related by H. S. Tyler, of Dalton, Mich., of Baldwin grafts from the same tree following the characteristics of the trees on which they were grafted—one a seedling, small, sour, high-colored apple, keeping very late; the other sweet. The grafts

were so changed that their identity was doubtful, though they were finally decided to be Baldwins.—*Rural New Yorker*, *August* 16, 1879.

P. Barry thinks the sweet and sour apple might be produced by grafting the Greening on a sweet apple stock in the way recorded of the ordinary graft hybrids, and that the striped apple referred to in the same article might have been produced by grafting a red apple on a green apple stock.—*Gard. Month.*, 1869, 358.

My garden contains two peach trees of the same variety, the Acton Scott, one growing upon its native stock, and the other upon a plum stock,—the soil being similar, and the aspect the same. That growing upon the plum stock affords fruit of a larger size, and its color, where it is exposed to the sun, is much more red; but its pulp is more coarse, and its taste and flavor so inferior that I should be much disposed to deny the identity of the variety if I had not inserted the buds from which both sprang, with my own hand.—*Knight*, *Phys. and Hort. Papers*, 273.

We know that a few of our best native varieties of the pear, when grown upon the quince, are more perfect than upon their own roots.—*W. C. Lodge*, *Dept. Ag. Rept.*, 1865, 201.

A slight effect is sometimes produced by the stock on the quality of the fruit. A few sorts of pears are superior in flavor, but many are also inferior, when grafted on the quince, while they are more gritty on the thorn. The Green Gage, a plum of great delicacy of flavor, varies considerably upon different stocks; and apples raised on the crab, and pears on the mountain ash, are said to keep longer than when grown on their own roots.—*Downing*, *Fruits*, *ed.* 1872, 29.

I have lately seen some curious cases of a modification of the character of black grapes, alike in flavor, size, and color, by being grafted on the White Syrian and White Nice; notably that recent introduction, Mrs. Pince, had its bunches and berries both grown out of normal character, and its flavor spoilt by being so treated.—*Gard. Chron.*, 1871, 1100.

A committee of the Southern California Horticultural Society reported that the Navel orange budded on the citron, lime, and China lemon, in each case showed marked and distinct characteristics derived from the stocks.—*Southern Cal. Hort.*, *II*, 78.

Robert Thompson says: "It is well known that the stock will have an effect upon the variety worked upon it."—*Pomological Magazine* (*Pomologia Britannica*) *under Ribston Pippin*, *III*, 141.

The double scarlet thorn budded on the pear in 1866, grew with extreme vigor in 1867, and flowered abundantly in 1868, and bore fruit abundantly, which were not single seeded, but contained from two to four seeds. The haws had large, open eyes, and were of a flattened shape. The trees from which the buds were taken had flowered previously for several years, but had never produced a haw. After the fruit had ripened, both buds and stock died.

Grafts of the same on pear stocks pushed splendidly in 1868, and formed leaves eight inches across, bore haws in 1869, though less abundantly, but with seed similar to that of the budded plants, and then died.

Paul's Scarlet Thorn, grafted on pear, grew luxuriantly, and the individual flowers were very much larger than on thorn stock, but of less vivid color. The excessive vigor of growth of the thorn on pear seems to forbid its long endurance.

Grafted on the quince, the thorn made nice dwarf plants.—*Gard. Chron.*, 1870, 458.

Pears grafted on the hawthorn showed a resemblance to it in form and other points.

The editor of the "Gardener's Chronicle" adds: "We cannot shut our eyes to the increasing number of cases of alleged graft-hybridization. Very few of these cases have been submitted to the rigid scrutiny of competent observers; nevertheless the number of the alleged cases is now so considerable that the necessity for inquiry and direct experiment becomes urgent. So many interests are involved in this question that it must not be pooh-poohed because it runs counter to general experience and belief. Admitting, for the sake of argument, that some of the recorded cases are what they pretend to be, it must still be granted that they are quite exceptional, but this very circumstance renders further investigation all the more desirable. In our search after the why and wherefore of the exception we may perchance be able to light upon some of the 'reasons why' for the general rule—itself greatly standing in need of further elucidation."—*Gard. Chron.*, 1870, 6.

M. Carrière twice inserted grafts of the *Aria vestita* on thorn trees growing in pots; and the grafts, as they grew, produced shoots with bark, buds, leaves, petioles, petals, and flower stalks, all widely differing from those of the *Aria*. The grafted shoots were also much hardier, and flowered earlier.—*Revue Horticole*, 1866, 457.

Some years ago we grafted the Styrian or Keele Hall Beurre Pear on the Citron des Carmes, which is one of our earliest summer pears, and the result is that the Styrian, thus treated, is about three weeks earlier than the same kind on the ordinary pear stock, and better flavored.—*The Garden, IV*, 334.

A few years ago I cut off most of the limbs of my Jargonelle and Vicar of Winkfield and grafted both with Clapp's Favorite. They have commenced to bear, and those on the Jargonelle are two or three weeks earlier than those on the Vicar.—*Stephen Adams, in Germantown Telegraph.*

I have also a Talman's Sweet, a root-graft twenty years planted, that until recently has borne very sparingly, while grafts cut from it and set in top of other trees have borne well and early.—*B. Hathaway, Ag., of Mich.*, 1871, 125.

Grafting a young twig on an older stock has the effect of making it flower earlier than it would otherwise do.—*Balfour's Bot.*, 284.

A scion taken from a young tree that has never fruited will be hastened in its growth when grafted on a mature tree, and bear sooner than it would if it had been left to itself.—*Horace Piper, Dept. Ag. Rept.*, 1867, 315.

While grafting never effects any alteration in the identity of the variety or species of fruit, still it is not to be denied that the stock does exert certain influences over the habits of the graft. The most important of these are dwarfing, inducing fruitfulness, and adapting the graft to the soil or climate.—*Downing, Fruits, ed.* 1872, 28.

John Watson, St. Albans, thinks the stock on which a Marie Louise pear is worked, causes it to set fruit remarkably well.—*Gard. Chron.*, 1869, 664.

The Double Yellow rose, which seldom opens its flowers, and will not grow at all in many situations, blossoms abundantly, and grows freely when grafted on the common China rose.—*Carpenter, Veg. Phys.*, 195.

Thoüin found that three species of *Robinia*, which seeded freely on their own roots, and which could be grafted with no great difficulty on another species, when thus grafted, were rendered barren. On the other hand, certain species of *Sorbus*, when grafted on other species, yielded twice as much fruit as when on their own roots.—*Darwin's Origin of Species*, 231.

Downing asserts that when a graft is taken from one of these trees [of North American varieties of the plum and peach which reproduce themselves truly by seed] and placed upon another stock, this grafted tree is found to lose its singular property of producing the same variety by seed, and becomes like all other worked trees— that is, its seedlings become highly variable.—*Fruits of America, 1st ed.*, 1845, 5. In the edition of 1872, page 4, this statement is questioned, and attention is called to the necessity of verifying it.

Cabanis (quoted by Sageret, Pom. Phys., 1830, 43) asserts that when certain pears are grafted on the quince, their seeds yield more varieties than do the seeds of the same variety of pear when grafted on the wild pear.—*Darwin's An. and Pl., II*, 312.

Two roses, one a light blush, finely formed but of undecided color, and the other very dark but not well formed, grew near each other. Buds of the light variety were inserted in the dark, which grew and retained all their habits of growth and foliage, as well as the form of the flowers; but the color, instead of a light and uncertain blush, was a rich, dark crimson, nearly but not quite as dark as the bloom of the stock.—*G. W. Campbell, Mich. Pom. Soc. Trans.*, 1877, 451.

We find that varieties like Jonathan and Domine will do well on very hardy, early maturing stocks, like Gros Pomier and Duchess, though they fail when root-grafted.—*Prof. J. L. Budd, of Iowa Ag. College, Letter of April* 12, 1879.

In some instances the stock exerts a marked influence upon the scion, thus showing the coöperative system in use between them. The "Gardener's Chronicle" mentions an instance of a couple of Muscat vines, worked on the Black Hamburg, in the same house with a Muscat on its own roots. Those worked on the Hamburg start fully five or six days in advance of the one on its own roots, although they are nearly a fortnight behind the Hamburgs they are worked on. It is a curious fact that there has never been seen any difference in the ripening season, nor any effect on the fruit.— *Josiah Hoopes, Proc. Am. Pom. Soc.*, 1873, 130.

Grafting the pear on the mountain ash is practiced in Nassau, and is said to retard the blossoming of the trees, and thus to adapt them for a climate where there is danger from spring frosts.—*Loudon's Gard. Mag.*, 1842, 228.

A scion of *Passiflora vitifolia* (*Tacsonia Buchanani*) was grafted on a stock of the variegated *P. quadrangularis*, and has subse-

quently shown variegated leaves.—*Florist and Pomologist*, 1876, 168.

The habit of the plant is sometimes altered by grafting. Thus *Acer eriocarpum*, when grafted on the common sycamore, attains in Europe double the height which it does when raised from seed. *Cerasus Canadensis*, which, in a state of nature, is a rambling shrub, assumes the habit of an upright shrub when grafted on the common plum. . . . The common lilac attains a large size when grafted on the ash; and *Tecoma radicans*, when grafted on the catalpa, forms a round head with pendent branches, which are almost without tendrils.—*Loudon's Horticulturist*, *ed.* 1841, 283.

Buds of *Bignonia grandiflora*, some of which were taken from a natural plant, others from a specimen of *B. radicans*, were grafted on a plant of the latter species. The first graft was a *trailer*, its wood *brown*. The second graft became a *shrub*, its wood *green*.—*M. Pepin*, *quoted by M. Chevreul*, *Jour. Lond. Hort. Soc.*, 1851, 98.

Mr. Fairchild, in 1721, grafted the holm or evergreen oak, (*Quercus ilex*) on the common oak (*Quercus robur*) as a stock, the result being, that while the leaves of the deciduous stock fell in the autumn as usual, those of the evergreen scion remained just the same as if on their own roots.—*Gard. Chron.*, 1871, 1100.

The stock has no other influence on the graft but that which the soil has on a plant; the latter will not grow in a soil which does not suit it, and the graft will only grow upon plants allied to it.—*H. F. Link*, *Jour. Lond. Hort. Soc.*, 1851, 42.

Following are instances of the Influence of the Scion on the Stock:

Henry Cane, in April, 1692, cut off a small plant of the common white jessamine, not larger than a tobacco pipe, at two joints above the ground and grafted with the yellow striped jessamine. It took, but grew feebly, and in four or five weeks died, and part of the stock died also, and was cut off. The next year it broke out at the joint below, with several shoots of the striped variety, and also made a strong shoot, from the root, of the striped variety. He tried the same experiment with several other variegated plants, but did not find any of them to transmute as the jessamine did.—*Phil. Trans.*, *abridged; Vol. VI*, *Part* 2, 341.

Suppose a plain jessamine tree with two or three branches from one common stem near the root. Into any one of these branches,

in August, inoculate a bud taken from a yellow striped jessamine, where it is to abide all winter, and in summer you find here and there some leaves tinged with yellow, even on the branches not inoculated, till by degrees in succeeding years the whole tree, even the very wood of all the tender branches shall be most beautifully striped and dyed with yellow and green intermixed. It is not material whether you cut off the branch above the inoculation to make the bud itself shoot. Even if the stock is not cut off and the bud does not shoot out, the same effect will be produced. Or if the bud lives but two or three months, it will in that time have communicated its virtue to the whole sap, and the tree will become entirely striped.—*The Clergyman's Recreation, by John Lawrence, London*, 1716, 65.

John Bartram, February 3, 1741–2, says, "Take a bud from a variegated jessamine and insert it into a plain jessamine; not only the bud will continue its variegation, but will also infect and impregnate the circulating juices that the branches and leaves above and below the bud will appear variegated."—*Darlington's Memorials*, 148.

When it is desired to turn a green jessamine into a variegated one, a single bud of either the silver-leaved or the golden-leaved will communicate its variegation to every part of the plant, even to suckers thrown up by the root. The same result takes place with the variegated laburnum, even if the bud should die, provided a portion of the bark to which it was attached continues to live. We have little doubt that the same thing would take place in various other plants.—*Loudon's Arboretum, II*, 1252.

Buds of a variegated jasmine were inserted in a plant of *Jasminum officinale*. The buds did not grow, but the bark of the stock closed up around them and healed over. The following year golden-variegated branches appeared in the plant.—*D. Wooster, at Royal Hort. Soc. Meeting, Aug.* 4, 1875.

It is notorious that when the variegated jessamine is budded on the common kind, the stock sometimes produces buds bearing variegated leaves. Mr. Rivers, as he has informed me, has seen instances of this.

The same thing occurs with the oleander (Gärtner, Bastarderzeugung, s. 611, gives many references on this subject).—*Darwin, An. and Pl., I*, 473.

A line of laburnums were budded in 1876 with a variegated

variety; most of the buds died, but the next summer many of the stocks were variegated precisely like the variety which was budded on them. In another case several laburnums were budded about five feet high with a new golden variety. The buds mostly took, and suckers on the stock, some nearly down to the ground, assumed a beautiful golden yellow hue just like the sort budded.—*The Garden*, *XII*, 250.

A scion of a golden-leaved laburnum was budded on a green-leaved laburnum as a stock. The buds were inserted at two or three feet from the ground, and in the course of a few months not only did some of the green-leaved stocks produce golden-variegated branches below the point of union, but pure golden stolons or suckers were thrown up from the root. — *Royal Hort. Soc. Meeting*, *Aug.* 4, 1875.

Mr. Purser states (believed by Dr. Lindley in Gard. Chron. 1857, 382, 400) that a common laburnum tree in his garden, into which three grafts of the *Cytisus purpureus* had been inserted, gradually assumed the character of *C. Adami;* but more evidence and copious details would be requisite to make so extraordinary a statement credible.—*Darwin*, *An. and Pl.*, *I*, 467.

The variegated variety of the *Castanea vesca* had been grafted, standard high, on an ordinary green-leaved sweet chestnut stock. The graft took, but from some cause or other afterwards died off; and subsequently a young shoot, with well marked variegation on its leaves, broke out from near the base of the stem.—*Burbidge*, *Cultivated Plants*, 61.

Passiflora Raddiana (*kermesina*) and *P. Impératrice Eugénie* were inarched with the variegated *P. quadrangularis aucubæfolia.* From the branch above the graft branchlets were produced which bore variegated leaves, from which cuttings were taken which have perpetuated the two variegated varieties thus produced.—*Florist and Pomologist*, 1876, 168.

About 1722 Mr. Fairchild budded a passion flower whose leaves were spotted with yellow into a variety with plain leaves, and though the buds did not take, yet after it had been budded a fortnight the yellow spots began to show themselves about three feet above the inoculation, and in a little time after that the yellow spots appeared on a shoot which came out of the ground from another part of the plant.—*Gard. Chron.*, 1871, 1100.

During the past season a mountain ash upon which was budded

a variety with variegated leaves, commenced to push forth young shoots from the main body of the tree below the point where the bud was inserted. In every case these had variegated leaves. Now in view of the fact that these *adventitious* buds were there in advance of the original variegated bud, the presumption is that they were created green and that their normal condition yielding to the controlling influence of the new branches, caused the change to occur by the flow of sap from above. Other instances are mentioned.—*Josiah Hoopes, Proc. Am. Pom. Soc.*, 1873, 130.

Three years ago a bud of the blood-leaved variety of *Betula alba* was put into a strong stock of *B. alba*, var. *populifolia*. After the bud had grown a foot it was accidentally knocked out. Over the place where it grew a bud of cut-leaved birch was inserted, which, growing, preserved the stock. Last spring, several inches below where the blood-leaved bud was inserted, a branch of a blood-leaved color put forth, showing that the coloring principle existed in the stock ten months after all the foliage had been destroyed. The new bud from the *populifolia* stock is the true European *alba*, showing that more than mere coloring had been transmitted.—*T. Meehan, in Bot. Gaz.*, 1879, 165.

William Reid asserted that variegated willows would transmit their influence to the stock.—*Gard. Month.*, 1869, 292.

Mr. Brown, of Perth, observed many years ago, in a highland glen, an ash tree with yellow leaves; and buds taken from this tree were inserted into common ashes, which in consequence were affected, and produced the Blotched Breadalbane ash.—*Darwin An. and Pl., I*, 473.

Mr. Rivers, on the authority of a trustworthy friend, states that some buds of a golden-variegated ash, which were inserted into common ashes, all died except one, but the ash stocks were affected (a nearly similar account was given by Bradley, in 1724, in his "Treatise on Husbandry," I, 199) and produced both above and below the points of insertion of the plates of bark bearing the dead buds, shoots which bore variegated leaves. Mr. J. Anderson Henry has communicated to me a nearly similar case.—*Darwin An. and Pl., I*, 473.

The influence of a graft of variegated abutilon ceased when the graft was removed.—*Gard. Chron.*, 1869, 554.

The variegated *Pittosporum Tobira* was worked on a green-leaved stock of the same species, and though the graft did not take

the contact was sufficient to cause the production of a variegated shoot below the graft.—*Gard. Chron.*, 1870, 664.

Violet-colored tubers of potatoes grafted on white produced only negative results, but it was not so with young shoots. On a plant with four shoots with green foliage, one shoot was cut down and grafted with a variety having violet-colored foliage. A fortnight after the operation the stock was of a lively carmine red, and the growing scion was of a more violet tinge.—*Gard. Chron., N. S., IX*, 662.

According to De Candolle (Physiologie Végétale) each separate cellule of the inner bark has the power of preparing its food according to its nature; in proof of which a striking experiment has been tried by grafting rings of bark, of different allied species, one above another on the same tree, without allowing any buds to grow upon them. On cutting down and examining this tree, it was found that under each ring of bark was deposited the proper wood of its species, thus clearly proving the power of the bark in preserving its identity even without leaves.—*Downing, Fruits, ed.* 1845, 24. Professor J. P. Kirtland, in commenting on this and connectep passages, says, "A graft of the *Green* Newtown Pippin will invariably render the bark of the stock rough and black (the habit of the variety) within three years after its insertion."—*Horticulturist, II*, 544.

If we cut up a long root of a seedling apple and insert scions of different varieties, a part on each root, the young trees which result from these grafts will have roots unlike each other. The difference may be very slight or it may be very apparent. The scion, then, influences the form of growth in the root.—*Prof. Beal, Ag. of Mich.*, 1876, 203.

Not only are root-grafts of this (the Northern Spy) certain to root from the graft, but when budded or grafted on seedlings it will develop in them a tendency to form a great many fibrous roots. —*B. Hathaway, Ag. of Mich.*, 1871, 127.

The gardener who in 1644 in Florence raised the Bizzarria orange, declared that it was a seedling which had been grafted, and after this graft had perished the stock sprouted and produced the Bizzarria.—*Darwin, An. and Pl., I*, 470.

A potato scion set into a tomato plant induced the latter to set small tubers in the axils of its leaves, as we see sometimes on the tops of potatoes. The grafting of an artichoke plant into a sun-

flower caused the latter to set tubers under ground.—*Prof. Beal, Ag. of Mich.*, 1876, 204.

The following relate to the Reciprocal Influence of the Stock and Scion:

Whatever opinions may have formerly prevailed among orchardists, it is now generally conceded by intelligent writers and cultivators that the stock affects the fruit of the scion in quality, productiveness, and time of bearing; and that the scion increases or retards the growth of the stock, and in some instances imparts its own peculiarities to the root.—*A. C. Hammond, Trans. Ill. Hort. Soc.*, 1870, 314.

The graft and the stock do, however, exercise a certain amount of reciprocal influence, the one on the other; and in certain cases hybrids or intermediate forms between the two are produced.—*A. W. Bennett, Thomé's Bot.*, 182.

A variegated plant, whether used as a stock or scion, has the faculty of imparting its variegations to the leaves and buds subsequently produced.—*Gard. Chron.*, 1870, 315.

A writer in the *Journal de la Société Imperiale, etc.*, assumes an effect of the stock on the scion, and from it argues the effect of the scion on the stock, "As the scion is modified in its fruit, its leaves, its growth, its vitality, it is quite natural that the stock should be also modified in its constitution by the graft."—*Hovey's Magazine*, 1863, 396.

Gärtner (Bastarderzeugung, s. 619) quotes two separate accounts of branches of dark and white fruited vines which had been united in various ways, such as being split longitudinally, and then joined, etc.; and these branches produced distinct bunches of grapes of the two colors, and other bunches with grapes either striped or of an intermediate and new tint. Even the leaves in one case were variegated.—*Darwin An. and Pl., I*, 474.

My Monstrous Pippin was grafted near the ground about thirty-five years ago. It soon begun to bear superb fruit; large and fair, but too tart to eat raw. About twenty years ago I sawed off five of the limbs and grafted with a sweet apple called Hay Boys. Soon the Monstrous Pippin grew milder until it has become a sweet apple, though the Hay Boys is not so sweet as formerly.—*Stephen Adams, in Germantown Telegraph.*

Many instances of the influence of the stock on the scion are

given in the TRANSACTIONS of this Society for 1878, Part I, pp. 83 and 84; and 1879, Part I, pp. 7–11, 18, 22, and 25–33. In the "New England Farmer," Vol. XI, p. 97, is an interesting paper on the "Reciprocal Influence of the Stock and its Graft," communicated to this Society by James Mease, M. D., of Philadelphia, an Honorary Member, which was read at the meeting on the 29th of September, 1832, in which he gives many instances of this influence. Dr. Mease says, "In France they used to graft the same sort over and over again three or four times on the same stock." In a communication published in the same journal, Vol. XII, p. 75, he gives additional cases. In the "Gardeners' Monthly," for 1876, p. 306, is an account of some experiments in bud grafting.

The effect of the quince in dwarfing the pear and bringing it into bearing is so well known as to require only an allusion, as is also that of other dwarf stocks. Instances of the effect of variegated abutilons on the stocks on which they were grafted are so numerous and universally admitted that mere mention of them is sufficient.

Dr. Sturtevant repeated that the influence of the stock and graft on each other should not be confounded with bud variations. There is a variegated coffee tree in the Department of Agriculture, at Washington; if this had followed the grafting, it would have been ascribed to the grafting. Change of form in leaves is common, and also form of tree. He had seen the beech tree in the form of a column. Graft hybrids are yet rather rare, and, consequently, we know little concerning them. The immediate effect of pollination, denied by Professor Eaton, is shown by the fact that the melon was largely influenced the same year. There is a probability that this influence is more frequent than is usually supposed. Irritation sometimes causes the formation of fruit without the action of pollen.

Charles M. Hovey spoke of the subject as one in which he was much interested; and he was glad to hear of the general interest in it. He had read and thought a great deal upon it, as well as observed for fifty years. The mutual influence of the stock and graft should be kept distinct from sports. He had very little respect for the opinions of botanists on simply physiological subjects. He quoted the views of Thomas Andrew Knight on the subject as follows:

"Many gardeners entertain an opinion that the stock communicates a portion of its own power to bear cold without injury, to the species or variety of fruit which is grafted upon it; but I have ample reason to believe that this opinion is wholly erroneous, and this kind of hardiness in the root alone can never be a quality of any value in a stock, for the branches of every species of tree are much more easily destroyed by frost than its roots. Many, also, believe that a peach tree, when grafted upon its native stock, very soon perishes, but my experience does not further support this conclusion than that it proves seedling peach trees, when growing in a very rich soil, to be greatly injured, and often killed, by the excessive use of the pruning knife upon their branches, when those are confined to too narrow limits. The stock, in this instance, can, I conceive, only act injuriously by supplying more nutriment than can be expended, for the root which nature gives to each seedling plant must be well, if not best, calculated to support it; and the chief general conclusions which my experience has enabled me safely to draw, are, that a stock of a species or genus, different from that of the fruit to be grafted upon it, can rarely be used with advantage, unless where the object of the planter is to restrain and debilitate, and that, where stocks of the same species with the bud or graft are used, it will generally be found advantageous to select such as approximate in their habits and state of change, or improvement from cultivation, those of the variety of fruit which they were intended to support." *

Mr. Hovey said that a pear tree grafted on the quince, gives entirely different growth from one on the pear, and pears are higher colored from such a tree. The plum stock does not give the supply of sap to the peach that the peach stock does. If every stock influenced the graft, we should have no Bartlett pears or Baldwin apples, but these are all the same as he knew them when a boy. These, and the Vicar of Winkfield and Winter Nelis pears, the Green Gage plum, the Jacques and George the Fourth peaches, the Black Tartarian cherry, the Double White camellia, and the Gen. Jacqueminot rose, have been grafted millions of times on seedling stocks, and are still unchanged. The purple beech is the same throughout, and many others might be named.

Mr. Hovey stated that the observations of Mr. Knight extended

* Horticultural and Physiological Papers, page 223.

over forty years, and his own over fifty years. He had grafted late varieties on the Madeleine and other early pears without hastening their ripening, and he doubted the statement that this effect was produced on the Styrian or Keele Hall pear, when grafted on the Madeleine. He mentioned a case in his own grounds, where it might have been supposed that a Beurre Bosc pear had been changed, but, on careful examination, it proved that a graft of the Lewis pear (probably cut from a sucker) had been inserted instead of the Beurre Bosc. An alleged case of the change of Beurre Clairgeau by grafting on the Aston Town (quoted by the "Rural New Yorker" from the "Gardeners' Chronicle"), might probably be explained in the same way. Loudon laid down the principle that grafts from all variegated trees would infect the stock, but the speaker discussed the subject only so far as respects influence on the character of the variety. He has Seckel pear trees grafted on hawthorn stocks, but never saw little haws on them; on the contrary, they bore the finest Seckels he had the previous year. There is no instance, to his knowledge, where it can be shown that when the true variety was grafted, it has changed. If trees could be made hardier by grafting on hardy stocks, that would be a very important point; but the idea of acclimation by this means is utopian.

The Chairman said that Mr. Hovey had decided the matter to his own satisfaction, but he thought there might still be a question whether the stock does not hasten the maturity of fruit.

O. B. Hadwen said, in allusion to the reported early ripening of fruits grafted on early varieties, that he had noticed that the Northern Spy and Holden Pippin apples ripen earlier in cultivated ground than in grass, even though the latter is ploughed occasionally; but, on one farm, the Holden Pippin is several weeks later than the general crop. Though he had raised twenty-five acres of apple orchard, from seed, he had never seen a single instance where he was satisfied that the stock had influenced the graft. Nor could he recall an instance where he could say that the pear or plum had been so influenced. Apples vary on different trees, and on the same tree, but the stock should influence all alike. He attributed the superiority of the fruit of one tree over another, to a difference in culture or soil. He did not wish nurserymen to think that the stock would influence the scion. Botanists say that there are instances, but the weight of evidence is in another direction. If a

graft had been taken from a Baldwin tree which had varied, and inserted in the original Baldwin tree, it would doubtless have regained its original characteristics.

Mr. Hovey again referred to Mr. Knight's views, and pronounced the statement that the Double Yellow rose was made to grow freely and open its flowers, by grafting on the China rose, an absurdity.

N. B. White thought the late ripening of apples in grass ground might be owing to the frost being kept longer in the ground. He had mulched pears heavily to keep the frost in and retard the blossoming, and in that way had got better pears, as the curculio does not attack the fruit from late blooms so much as that from earlier. He grafted a Porter apple tree for a neighbor, with scions of the same variety taken from a tree which produced remarkably fine fruit. At the same time he cut scions from the tree which he was grafting and put them in, and when they fruited he could not discover any difference. He thought the variations of which so many instances had been adduced were simply sports; and said that, though it is interesting to get the facts together, they do not establish any principle.

Edmund Hersey said that when he was a boy his father purchased a piece of land on which was an apple tree that always dropped its fruit before it was ripe. His father grafted one side of the tree with the Rhode Island Greening, and when the grafts bore, the fruit partook of the character of the stock with regard to dropping. The greatest number of apples ever gathered from the tree was twelve. The dropping might have been due to the soil. His father bought another piece of land on which was a natural apple tree which bore enormous crops, but every apple had a peculiar rot on one side; they would hang until frost came, but when gathered a quarter part would be rotten. Twenty-five scions were inserted in the tree, not one of which took, and it was afterwards budded with summer, autumn, and winter kinds—sweet and sour, and of all colors. The rot affected all the kinds; there never was a peck of apples free from it. A Baldwin tree was planted close to it and the old tree cut down; the Baldwins never rotted. The tree when cut down was somewhat rotten in the top; it had previously been very sound. The speaker thought these facts positive proof that the stock does influence the scion. His father had two Baldwin trees, one of which, by the roadside, bore very handsome fruit, though not very large; the other tree, which grew by the side of the

barn, bore larger fruit. When the latter was large enough to bear two barrels of apples it was removed to the roadside, and has continued to bear large, though not so uniform sized, apples.

D. W. Lothrop thought it useless to discuss the influence of the scion on the stock, unless we can show some benefit to be derived from it. The influence of the stock on the scion is more important. The late Samuel W. Cole believed in this influence and wrote upon it in his "American Fruit Book" and in the "New England Farmer" which he edited. But when he had presented to him a barrel of Red Russet apples, which had a firmer flesh and kept longer than the Baldwin, and was told that the variety was produced by grafting a Roxbury Russet tree with Baldwin grafts taken from the same tree as those used in the trees around, Mr. Cole could not believe in quite so much influence. We may admit slight changes, but not the production of a new variety, and the changes may not be in the direction of improvement. The speaker had a harsh pear which he grafted with Winter Nelis, and the fruit of the grafts was green, not larger than walnuts, inclined to crack, and uneatable. This was apparently a perfect instance of the influence of the stock on the scion, although the influence might afterwards have been out-grown. The leaf and habit of the tree were still the true Winter Nelis. The tree was grafted with another kind, which was not influenced by the stock. He has the Red Astrachan apple grafted on the Gilliflower, and the fruit is just as acid as any other.

The Chairman thought we could say that we know the influence of the stock on the graft is proved, and that it may be propagated. As to the influence of the graft on the stock, every nurseryman knows that the character of roots is changed, and that the roots of a row of Baldwin apple trees in the nursery will be alike, and the roots of a row of Roxbury Russets will be alike, and will differ from those of the Baldwins. Each row can be told by its roots.

Mr. Hadwen confirmed what the Chairman had said of the influence of the grafts on the roots of stocks. If part of the same lot of pear stocks are grafted with Bartlett and part with Onondaga, the two varieties can be distinguished by the roots. The Roxbury Russet under high cultivation gets to resemble the Greening in appearance. He had known a tree standing by a hog-pen, where the fruit grew very large and had scarcely any russet. This might have been wrongly attributed to the stock.

Benjamin G. Smith thought that some very notable examples of the effect of the stock on the graft had been adduced. He mentioned the very fine Winter Nelis pears exhibited by John L. Bird, which were produced by grafting on vigorous stocks, like the Vicar of Winkfield. Mr. Smith had increased the size of some of his pears from one quarter to one half in this way, but at the expense of quality. They were grafted into the tops of the trees; on the side branches the size would not be increased. He had grafted four or five kinds of apples on the Dutch Codlin, and all grew equally well.

Mr. Hovey said that Seckel pears would not be increased in size by grafting on side branches. He thought that neither the size nor the quality of fruit was changed by grafting. There are many conditions to be provided for in preparing for a crop of fruit. He had never known a variation of any kind, in quality, or any other respect, in all his experience in grafting.

Aaron D. Capen said that he has two trees of Vicar of Winkfield standing very near together, one of which invariably bears good fruit, and the other never, which he could attribute only to the effect of the stock, there being no difference either in the soil or treatment.

Mr. Hovey said that one year he had fifty bushels of Vicar of Winkfields, very few of which were fit to eat; afterwards he had crops all of which were fine.

Benjamin P. Ware mentioned an instance, which he learned from Major D. W. Low of Gloucester, of a Bartlett pear tree standing in a neighbor's grape border, which bore only very small, poor fruit. This appeared to be an instance of the influence of the stock on the scion; but Mr. Low removed the tree to his own grounds and now it bears as good fruit as can be found.

Mr. Ware spoke of an apple presented by Gideon R. Lucy, for the premium of one hundred dollars, offered by the Essex Agricultural Society for a new and superior winter apple. The variety offered was said to have been originated by grafting the Baldwin and Roxbury Russet into each other over and over again, but how many times was not stated. Specimens were shown at the fair of the Essex Agricultural Society, last fall, and were pronounced identical with the Red Russet. Not a particle of evidence has been produced that the statement of its origin by repeated grafting was correct. Professor Maynard, of the Massachusetts Agricul-

tural College, (who believes in the influence of the stock on the scion), had a variety said to have originated in a similar manner, shown him, and a Mr. Lothrop had a similar claim. Mr. Ware read a letter to Professor Maynard, from George F. Eastman, of South Hadley, concerning the apple shown to Professor Maynard. Mr. Eastman received the statement from his father, on whose farm the tree grew. From this letter, it appeared that the tree was budded by the elder Mr. Eastman in the nursery row, with Roxbury Russet, but, before transplanting, and before it had borne fruit, was changed from Roxbury Russet to Baldwin, with the exception of two limbs, which were left by mistake, and bore Russets. The rest of the tree bore Baldwins, and as it was desired to have the tree wholly Baldwin the Russet limbs were cut off. Several years afterwards it was noticed that a limb just over where one of the Russet limbs had been cut off, bore apples different from those on the rest of the tree, and they have continued to do so for three or four years. These are Red Russets and they keep better than the Baldwin, and nearly as well as the Roxbury Russet. All the apples on this limb are Russets. It bears quite as well as the rest of the tree (which is Baldwin), and has always borne the odd year, and never in the even year.

Mr. Ware said there was no certain evidence that the stock supposed to have been grafted with Roxbury Russet in the nursery row, was not omitted in grafting (in which case the limb bearing Red Russets was part of a seedling tree), or that it was not grafted with Red Russet.

He referred to the statement that sweet oranges, when grafted on wild stocks, revert to the wild state in a few years (TRANSACTIONS, 1879, Part I, page 23), and said that the apparent deterioration was caused by the suckers crowding out the graft. He had been unable to trace out any evidence that the quality of fruit had changed through the influence of the stock. He quoted from an address delivered by him before the Essex Agricultural Society in 1869, the opinion that while the graft has an influence in forming the habit of the roots of the stock, the stock exerts no influence upon the variety of fruit grafted into it; and said that his views on these points were unchanged. He had found nurserymen and tree pedlars selling trees as better, because double worked, but thought it an imposition.

The Chairman thought the subject of more practical importance

than it was considered by some. Roses, particularly those of weak growth, will give a much more magnificent bloom when worked on the Manetti stock, than those on their own roots.

Mr. Hadwen said the Red Russet is well known in Worcester county, and that he never heard it called a cross between the Baldwin and Roxbury Russet. It is neither Baldwin nor Roxbury Russet, but is as distinct in form, color, texture, and juice, as any variety.

The Chairman said that in budding a row of Bartlett pears, for example, we find some much more vigorous than others, which he thought the effect of the stock.

On motion of Leander Wetherell, it was voted to continue the discussion of the subject on the next Saturday.

MEETING FOR DISCUSSION.

Saturday, March 13, 1880.

A meeting for discussion was holden at 11 o'clock, W. C. Strong, Chairman of the Committee on Publication and Discussion, presiding. The subject was the Influence of the Stock and Graft, continued from last week.

Benjamin P. Ware brought up the three cases mentioned last Saturday, in which it was claimed that a new variety of apple, known as the Red Russet, had been produced by grafting the Baldwin on the Roxbury Russet. The appearance of these three cases was very remarkable. The Red Russet is not, by any means, a new variety. Specimens of Mr. Lucy's apples were here exhibited by Mr. Ware.*

In all his experience he had never known an instance where such changes as these alleged could not be explained otherwise than by

* It has since been ascertained that the apples offered by Mr. Lucy for the premium for the best new seedling, were the Red Russet, which originated on the farm of Aaron Sanborn, of Hampton, N. H., about 1840. The account given by the family of Mr. Sanborn, who is now dead, is that an orchard of Roxbury Russets was grafted with Baldwin, and that all the trees bore Baldwins, except one, which produced the Red Russet. (See Transactions of the Essex Agricultural Society for 1880, page 127.)

the influence of the stock. Some of the quotations from Darwin and others, commenced, "it is said," but did not inform us who said it.

Leander Wetherell asked how Mr. Ware rebutted the testimony in the three cases alleged.

Mr. Ware replied, that by following back the statements he found there was no foundation for them.

Charles M. Hovey agreed with Mr. Ware. The oldest English and French writers speak of the influence of the quince and Paradise stocks in dwarfing apples and pears; but the influence we are now discussing, is supposed to be upon the character of fruit. Mr. Hovey here quoted from an article by Mr. Knight, the remark that Dr. Erasmus Darwin's imagination was too strong for his judgment, and expressed the opinion that the case was the same with his distinguished, but younger kinsman.

Mr. Hovey thought the views expressed in Dr. Sturtevant's quotations from Downing did not agree with the following passage from page 27, of the edition of 1872: "The well-known fact that we may have a hundred different varieties of pear on the same tree, each of which produces its fruit of the proper form, color, and quality; and that we may have, at least for a time, several distinct though nearly related species upon one stock, as the peach, apricot, nectarine, and plum, prove very conclusively the power of every grafted or budded branch, however small, in preserving its identity." The speaker did not wish it to go out to the world that many of the members of the Society believe that the roots of trees are influenced to any extent by the variety grafted on them. Of course, this would be the case when root-grafted trees root from the graft, but if we graft a weak growing rose on the Manetti stock, do the roots become weak? If so, what would be the object? When the apple is grafted on the Paradise stock, the pear on the quince, the tree pæony on the tuberous rooted pæony, the fibrous rooted *Ipomœa* on the tuberous, or the double flowering almond on the plum, are these stocks influenced by the grafts? If the stock influences the time of ripening of the fruit of the graft, we might get Bartlett pears much earlier by grafting on the Amiré Joannet, or later, by grafting on Vicar of Winkfield; but he had never seen a really good, ripe Bartlett, earlier than the 8th of September, or later than the 25th. He had grafted Clapp's Favorite on Jargonelle, Dix, Beurre d'Aremberg, Columbia, Glout Morceau, Beurre Diel,

and Flemish Beauty; Dana's Hovey on Gustin's Summer, Harvard, and Vicar of Winkfield, and Bartlett on Winter Nelis, Easter Beurre, Belle de Thouars, Green Chisel, Onondaga, and Vicar of Winkfield, without changing the season of ripening in the least. In 1862 he sent to market a bushel or more of each of one hundred and fifty kinds of pears, and many other varieties in less quantities; in 1880 he had but a hundred kinds. The reduction had been effected by grafting over the trees of the less valuable kinds with the standard sorts; but, among all these varieties, none of the stocks affected the grafts. If grafting a late pear on an early one makes it earlier, grafting an early pear on a late one ought to make it later. As to the increase in the size of Mr. Smith's Seckels, spoken of last week, and attributed to the vigorous stock, Mr. Hovey said that cultivation has much to do with increasing the size of fruit. He did not doubt the statement made by Mr. Hersey at the same meeting, in regard to the dropping of the apples, but this could be accounted for in a thousand ways.

J. W. Manning had repeatedly noticed that the roots of trees grafted with Siberian Crabs generally run down more than those of other trees, which he attributed to the influence of the graft. He had never seen the roots of dwarf trees run down.

Mr. Talbot had seen nurserymen designate pear trees by the roots, though all were budded on French seedling stocks. Mr. Weston grafted the Bartlett on the Easter Beurre, and the fruit was twice as large, and kept two weeks longer than that from grafts on natural stocks.

Mr. Hovey doubted whether any one could tell a Winter Nelis pear tree by its roots. This variety does not grow as strong as some others—the Vicar of Winkfield, for instance—and in a weak growing tree the roots will be proportionally weak. We do not generally graft on weak stocks.

Washburn Weston gave an account of the change in the Hightop Sweetings, mentioned last year. He was gardener to Dr. Ira Warren, who wished to have some Hightop Sweet apples, and procured grafts which he inserted in Red Astrachan trees. The fruit produced was neither Hightop nor Red Astrachan. It was not a red apple, but white with a red cheek, like the Maiden's Blush. It ripened at the same time with the Red Astrachan. Grafts from it were put on a Russet tree, from which fruit was shown, resembling the Red Astrachan in form, but sweet. They

grew in clusters like the Red Astrachan. The grafts on Red Astrachan ripened their fruit in August; that of the grafts on the Russet keeps till March, though then past its prime. Dr. Warren has had, since the Red Astrachan was first grafted with Hightop, eight or nine gardeners, two of whom are alive now.

Mr. Washburn's Bartlett pears all ripened about the middle of September, except those grafted on the Easter Beurre, not one of which was ripe on the 12th of September. His father grafted two Talman's Sweet apple trees with Red Astrachan, and the fruit was much less acid than usual, and also more oblong in shape than when grafted on the Greening. He had found the Hubbardston Nonsuch grafted on the Large Yellow Bough much sweeter than it generally is. He believes that the soil has an influence on the quality of the fruit.

The Chairman requested the Secretary to read from his notes, Mr. Hovey's expression of ignorance of any effect of the stock on the scion. The minute was as follows: "Mr. Hovey had never known a variation of any kind in quality or any other respect in all his experience in grafting." The Chairman thought it must appear strange to those outside of the Society that so much difference of opinion should exist here on this subject. He was not prepared to say that he had observed any radical and permanent change, such as the production of a new variety like the Red Russet, by grafting the Baldwin on the Roxbury Russet; but this is very different from influencing and changing the character so long as the graft remains on that stock. Of this he had noticed so many instances that he was convinced that there is a modification from this cause. The opening sentence of the passage read from Mr. Knight had escaped Mr. Hovey's observation. We should bear in mind that the question is not whether varieties are radically changed, but whether they are influenced at all. Why should not the size of fruit be influenced by the stock as well as the size of roses? If we change the size of fruit do we not change its character? The ordinary pear stocks imported from France and raised from the wild pear are not as vigorous as the kinds grafted on them. When we get a cultivated variety on them we get a more vigorous growth, and it changes the root of the stock. If we could get stocks with the vigor of the Bartlett, Vicar of Winkfield, or Buffum, they would be more valuable than the imported seedlings. The speaker objected to the ridicule cast on the subject by some persons. Mr.

Hovey had defied any one to produce proof of *Magnolia glauca* being rendered more hardy by grafting on *M. acuminata*, but this is not a fair test. If it causes the graft to grow late it may be less hardy. It is beyond dispute that *M. acuminata* does impart great vigor to such species as *glauca*, *Soulangeana*, *Thompsoniana*, and *Lennei*.

E. W. Wood thought that Mr. Hovey, in stating that he had never seen any influence of the stock on the graft, meant to limit it to the change of varieties. The quotation from Mr. Knight, in regard to the two Acton Scott peach trees, is a strong argument in support of the belief that the stock does influence the graft. Mr. Knight had budded the trees himself. We do not desire to obtain new varieties by grafting, but we may desire modification. The account given of the origin of the Red Russet, is generally accepted. All practical growers know the necessity of growing some pears on quince and some on pear stocks. There is not one Duchesse d'Angouleme pear in a hundred, grafted on a pear stock. On the quince it will bear in five years; on the pear it takes fifteen. If Mr. Hovey does not graft roses he is in conflict with all the principal rose growers of Europe.

Mr. Hovey said that he did not come here to controvert the statement in regard to the Duchesse d'Angouleme when grafted on the quince. But there is no fruit that will not be better when grafted on its own root. He would rather have a tree of Doyenne Boussock, on the pear stock, bearing ten bushels of pears, than to have fifty trees on quince, bearing the same quantity. The best cultivators of fine specimen roses say that they will do as well on their own roots as grafted. If every stock is to partake of the character of the variety grafted on it, nothing is gained by grafting. The object of grafting the *Magnolia glauca*, which is a bog plant, on *M. acuminata*, is to adapt it to soil of a different character from that in which it naturally grows. *M. acuminata* has strong roots. *M. Soulangeana* is grafted because it makes a tree sooner than on its own roots, and not to change the character of the variety. The idea that the Red Russet apple was produced by grafting is absurd.

The Chairman said that the question whether new varieties are produced by grafting, is only incidental to the subject under discussion.

Benjamin G. Smith said that Mr. Hovey was correctly reported

as saying that he had never known a variation of fruit in quality or any other respect in all his experience in grafting, and asked whether he wished the statement to be understood without qualification.

Mr. Hovey replied that he had no qualification whatever to make except in regard to dwarfing the graft.

N. B. White said that a Mr. Page, of Dorchester, exhibited Delaware grapes which bore a strong resemblance to Dianas, and stated that the change was caused by grafting them on the *Labrusca* stock, but he doubted the correctness of the statement.

Patrick Norton thought that weak growing roses were improved by grafting on strong stocks; the Yellow Tea on the Tailby stock for instance. Hardy Hybrid Perpetuals grow much stronger and produce finer flowers when grafted on strong stocks. The roots of Manetti stocks do not become like those of Tea roses when the latter are grafted on them.

D. W. Lothrop thought there was but little use in collecting all these instances of the influence of the stock on the graft, if we cannot deduce from them any fixed scientific principles. If we graft the Hightop Sweet into the Red Astrachan and it is changed, the character of the change cannot be foretold. The great law is that the scion is not affected. The sap is elaborated in the leaves and carried down into the stock, and it would seem reasonable to suppose that, in four or five years after grafting, when the scion has made a great deal of wood, shoots from the stock would bear a modified fruit. But it is not so. Perhaps we must admit that there is some influence of the stock over the scion as to vigor and ripening. He regarded the various influences claimed as merely freaks of nature, governed by the "law of disorder." To utilize these influences, our knowledge of them should be systemized; but if results are not always alike from the same plain causes, it cannot be done.

Joseph H. Woodford thought that all the arguments presented at this meeting went to prove that the stock and scion do influence each other. Governor Claflin's gardener told him that grafting the variegated trailing abutilon on the strong green-leaved kinds would cause variegations in the stock. He did not believe it, but tried the operation in his own greenhouse and got variegated suckers from the stock, which retained the variegations when propagated.

Mr. Hovey admitted the influence of the variegated abutilon on stocks of the plain kinds. He had illustrated this in a paper read before the Society at one of its discussions five years since. Loudon long ago made the remark that this variegation affected the stock, and was therefore supposed to be a disease which could be communicated by grafting.

J. W. Manning said that in 1849 he was employed by Mr. Cole, who then had young trees of the Red Russet in his nursery. Their growth was similar to that of the Baldwin, but stronger. The Black Oxford apple grows very strong and upright, and the roots run equally deep.

Joseph Tailby thought that the subject under discussion was exhausted last year. He had never seen any change in roses from grafting. The only reason for grafting roses is to make plants more quickly. You get stronger growth because the stock is established. He had seen Black Hamburg grapes grafted on the Barbarossa, and the foliage was larger, but the flavor was not as good as that of fruit from plants on their own roots. The berries and bunches were not any larger than usual.

The Chairman expressed his belief in the practical utility of discussing this subject.

Mr. Talbot thought that the solution of the questions under discussion would be found by the study of vegetable physiology. At present the subject appears confused, but all systems are evolved from disorder.

The Chairman read a letter from Charles Downing, of Newburgh, N. Y., the eminent pomologist, in which, after expressing his interest in the discussions of the influence of the stock on the graft, as printed in Part I of the TRANSACTIONS for 1879, he said, "There is no doubt that in large trees, top-grafted, the stock has more or less influence, but when grafted or budded on small stocks, near the ground, the influence, if any, would be little." The speaker had bought pear stocks in former years, for which he paid a high price because they were said to be free from leaf blight. This proved to be incorrect, but the principle is correct. If we could get such stocks from selected Vicar of Winkfield seeds, or from the Chinese Sand pear, they would be valuable. They might impart vigor to the kinds grafted on them.

Mr. Hovey asked why we wanted such vigorous stocks. They are more liable to blight than moderate growers. Orchards laid

down to grass do not generally blight, and short-jointed growers are not so apt to blight. Mr. Quinn says that the Chinese Sand pear has blighted more than anything else.

Leander Wetherell thought that the most impressive lesson to be learned from the discussion is that the unknown has greatly the advantage over the known. The evidence is not conclusive on either side, and we ought to observe with more care. Professor Agassiz said that when we discuss what we understand, we agree; but when we get to subjects that we do not understand, we differ and wrangle.

The Chairman announced that on the next Saturday there would be a discussion on Rose Culture, to be opened by Joseph Tailby.

MEETING FOR DISCUSSION.

SATURDAY, March 20, 1880.

A meeting for discussion was holden at 11 o'clock, William C. Strong, Chairman of the Committee on Publication and Discussion, presiding. The subject for discussion was Rose Culture, and was opened by Joseph Tailby.

Mr. Tailby spoke first of the different methods of propagation, illustrating his remarks by two plants, one grafted, the other grown from a cutting of hard wood. The former was a much finer plant than the latter. It is almost as easy to propagate Hybrid Perpetual roses from cuttings of green wood as Tea roses, but he was never successful with short cuttings of hard wood. A short cutting will callus, but will not form roots. A long cutting may have, perhaps, a dozen eyes, each one of which would have made a plant if grafted. He had been most successful with cuttings when they were taken off with a little heel of bark. He grafts with a simple splice, though tongueing holds the scion in place while tying. The plant shown was grafted the 8th or 9th of January, on a Manetti stock which was potted in December, and when grafted had grown about an inch. They generally flower as early as this time. The wood of imported roses is more solid

than that of plants grown here. The wood of this was not ripe enough when grafted. They need a little heat after grafting to excite growth.

The Chairman said that he had recently visited Mr. Tailby's plant houses, and was very much pleased with their appearance. He was especially struck with his success in grafting.

Mr. Tailby went on to say that roses bloom as quickly when grafted as when raised from cuttings, or even more quickly, and make strong plants sooner. He thought the flowers were better also. A plant on its own roots will take two or three years to become as strong as a grafted plant of one year; then it may be as good as a grafted plant, but you get stronger growth from the graft to commence with. He was of the opinion that all Hybrid Perpetual roses, even Gen. Jacqueminot, are better grafted. He always uses the Manetti stock, and thought it would make a good stock for ever-blooming roses—as good as Laure Davoust. It is good in light soils, but not as good as the brier in heavy soils. It is one of the finest for an inside border. It could be grown in one year so as to graft or bud standard high. He did not think it would suffer from heat so much as the brier. It is vigorous, and, if the cuttings are properly prepared, will not throw out suckers.

The Chairman expressed the opinion that the Tailby stock suffers when budded high, especially with weak growing kinds like Niphetos. He did not consider it desirable.

Mr. Tailby said that he has eight or ten Maréchal Niels on the Tailby stock, and James Cartwright has many of the Niphetos on the same stock, none of which have suffered. Maréchal Niel overgrows the stock and sometimes forms a bunch as large as a man's fist, like a pear on quince. Some cultivators have earthed up so as to get roots from the graft. If the bark of the stock were slit so as to allow it to expand, there would not be so much difference in the size of the stock and bud. He prefers to have all roses, including Maréchal Niel, budded. A budded plant is all on one stem. Perhaps if Tea roses were kept free from suckers they would do as well as budded plants; but he thought that he got better flowers from budded plants.

A young grafted plant would not flower sooner for having the top cut off, but would be much injured. The reason that the plant shown had not flowered was that the wood had not ripened. If

the base bud started he would not cut it down. It is desirable that what wood is made should be made early, so as to be well ripened. He would let the graft grow, and cut down next year, and would not shift the pot. Each grafted bud gives as good a plant as a cutting with twelve eyes.

James Comley said that he was astonished to hear Mr. Hovey say last week that all roses do better on their own roots than when grafted. He had tried two hundred and fifty kinds, and not one did better on its own roots. The two plants shown by Mr. Tailby illustrated the difference; the speaker said he would like to take them and cultivate them for eighteen months and see which would do best. The sap from the whole stock goes into the scion. In grafting he preferred not to tongue, because there is danger of bruising the stock or scion. The Bon Silene can be grown very fine on its own roots, but much better when grafted on Laure Davoust. The Tea roses are true perpetuals, and want to grow constantly; he had lost many by drying them off, but this winter he had watered constantly, and had more flowers than ever before. Tea roses will not make much growth on briers, but should have constant growers for stocks. The Manetti also is deciduous, and makes no roots in winter. Perhaps grafted roses do not give so many flowers as plants on their own roots, but they are better. Hybrid Perpetuals do best on Prince's stock, which is a seedling brier. Mr. Prince is one of the best English rose growers, and the seed from which he raised his stocks was gathered from selected roses. It is difficult to get Dog briers small enough to graft. Prince's stock is the best for pot plants. A plant of Sir Garnet Wolsley, fourteen months old, exhibited by the speaker, had not rooted from the graft. Plants grafted on Dog briers and potted deep did not root from the graft, and almost all the roots of the stock died out. The Manetti stock makes roots at the surface.

The Chairman said that Ellwanger & Barry insist on the importance of planting budded roses low in the ground, so as to cover the stock.

Mr. Comley said that roses planted deep grow yellow and begin to die in two or three years. The Manetti grows naturally in high and dry soils. He did not think that the brier suffers from heat in this country; he had seen tall standards on this stock, in England, in the hottest places, and in New York and Flushing he had seen them as fine as in England.

The Chairman agreed with Ellwanger & Barry, in regard to planting roses on brier stocks deep, but differed in regard to those on Manetti. He thought also that the heat of our summers injures the stems of standard roses. He had such a plant of Baron Prevost, the stem of which he protected with straw and it flourished well.

Mr. Comley said, that a few years ago, he visited all the best rose growers in England, and all said they got as good a plant from a graft in one year, as they could on its own roots in two. He thought grafted plants would produce twice as large roses as those on their own roots. He would let all the wood of a graft grow, and prune after it was mature. The base eyes will not start as long as the leader grows. He wants only one shoot the first year.

The Chairman had a large number of grafted plants, very much like the one shown by Mr. Tailby, which grew so vigorously that the base buds broke. He had five hundred Gen. Jacqueminots which broke at the base. He cut them off and got good shoots, but not as vigorous as he hoped for. He agreed with Mr. Comley that a single shoot is best, and intended to try to ripen one shoot.

Mr. Comley said that the new Hybrid Tea and Perpetual roses such as Madame Lacharme, Boule de Neige, and Coquette des Blanches, grow more than other varieties. He thought it was owing to the Tea blood. It is a great mistake to over-pot roses and force them into too rapid growth. He wanted ripe, hard wood, if there was but a foot of it. He had plants on the Carolina stock which grew very strong, but the flowers were small. He had seen Gen. Jacqueminots potted in eight-inch pots and watered from the hose, whether the plants had any leaves or not. Most of his plants remained out too late last fall, and froze too hard; sixty which he placed in the barn cellar flowered finely. The tops cannot be frozen without injuring the roots. Root action should commence before the buds start. He would never keep a house of Hybrid Perpetuals above 45° by night and 60° by day. You cannot expect good roses without firm wood. Many cultivators shift too often. He exhibited a shoot taken from a plant of Jean Liabaud, which had been in an eight-inch pot for three years. He has thirty-six varieties, almost all of which have grown too strong. He has seen roses without leaves in eight to twelve-inch pots, which were filled with water. No plant requires so much care as

Hybrid Perpetual roses; tropical plants will, comparatively speaking, take care of themselves, if they have plenty of water. Roses in five-inch pots require good drainage. He seldom uses compost, but plain loam; it is well to add a little ground bone. He thinks a solution af saltpetre, at the rate of a handful to six gallons of water, the best thing both for watering and syringing. When he came to this country, he brought eighty varieties of roses, of which Caroline de Sansal, Mrs. Elliot, and Anna de Diesbach, were among the best. He wanted to increase them and grafting was suggested. He prepared Manetti stocks and grafted them, and in eight weeks could cut beautiful roses, one or two from each plant. He put cuttings round six-inch pots in September, and placed them in a cold frame, and in three or four months the pots were full of roots. He grafted in spring, selecting good flowering wood for grafts. He has always loved roses, and they seem to grow for him.

Charles M. Hovey said there is no doubt that the Prince's stock is a good one—much better than the suckers which were formerly used, before seedlings were raised, and which root only from one side. Mr. Baines, an eminent English culturist, says the only object in budding roses is to increase them rapidly. In 1848 the speaker had 1400 varieties of roses on his catalogue. The Hybrid Perpetuals were then almost unknown. From 1844 to 1860 (sixteen consecutive years) he was awarded the first prize for the best thirty roses, and the plants were all on their own roots. He dug up last fall old plants that had borne a thousand flowers. In 1844 he called on M. Laffay, the great French rose grower of that day, who raised the first fine Hybrid Perpetual rose (La Reine), still one of the very best, and from that day to this he had never grafted a thousand roses. Moss roses are rarely grown except on their own roots. A year ago he visited William Paul, one of the great English rose growers, and saw a house a hundred feet long, with plants in fifteen-inch pots, some on Manetti and other stocks, and some on their own roots. They do very well budded, but are uncertain. In 1844 he imported La Reine and Princess Adelaide, from which he took scions and grafted into roots, and in May had plants with buds. In 1859 or '60 he had a gardener from England, who wanted to try budding roses, and he did, and soon got enough of such stock. He has never grafted any since, except a few new varieties to increase them more rapidly to get good

cuttings. He has plants of Gen. Jacqueminot on their own roots which make canes six feet high, and he believes that he can beat grafted roses with plants on their own roots.

When a young man he used to go round among the cultivators in New York, and saw great plants of the old Yellow Tea rose on their own roots, with from twenty to twenty-five buds each. He invited any one to come and see a Safrano rose on its own roots in one of his houses, which makes suckers eight or nine feet in length, and twice as large as a grafted one of Mr. Paul's. There are many ways of growing roses, which are good. Grafting is not the only way. The law of nature is that every plant does about as well on its own roots as in any way. There are exceptions, but the number is limited. He has forty varieties of Hybrid Perpetuals on their own roots, planted in beds last spring, which have made shoots six feet high. Exhibition roses in England are generally budded because the varieties are new and scarce. Propagating largely by cuttings of soft wood is an American system altogether.

Mr. Tailby said that ninety-nine per cent. of the exhibition roses in England are budded.

Mr. Comley said that when in England a few years ago he saw almost all the noted rose growers, and asked why they did not grow roses on their own roots, and the answer was that they did not want them.

Mr. Hovey agreed with Mr. Comley that a large proportion of the exhibition roses in England are from grafted plants, but he believed this was not because the growers think they can get better blooms from grafts, but because they can be propagated more rapidly in quantities for sale. In this country Ellwanger & Barry graft largely for the same reason. There is danger of losing a weak variety grafted on a strong stock if care is not taken to destroy the suckers, but with plants on their own roots this risk is avoided.

Mr. Tailby had never seen any exhibition roses on their own roots. Many large growers of roses in England have not a greenhouse. A nurseryman who grows a hundred thousand roses must propagate them by planting Manetti cuttings and budding them. He had himself four thousand cuttings in frames, which have callused finely, and which he would bud in September.

Mr. Comley thought that some individuals in England had

spent as much as £500 each to produce the best twelve roses for exhibition. There are men who cannot identify three varieties, who produce some of the best roses. The speaker said that when he pots roses he does not use the same compost for all. If Baroness Rothschild is potted in the same soil as Louis Van Houtte, the former will be coarse. Those who adhere to the old roses will not get premiums. In five years the speaker had imported one hundred and eighty varieties of roses.

It was voted to continue the discussion of the subject on the next Saturday, and also to consider the best method of conducting the meetings for discussion.

MEETING FOR DISCUSSION.

SATURDAY, March 27, 1880.

A meeting for discussion was holden at 11 o'clock, William C. Strong, Chairman of the Committee on Publication and Discussion presiding. The subject was Rose Culture, continued from last week, and also the Best Method of Conducting the Meetings for Discussion.

James Comley, who had the floor at the last meeting, was again called on. He thought it was folly to deny, as some have done, that there has been any improvement in roses for the last twenty years. He could select fifty new roses which he would not give for a thousand of those on the catalogues of thirty or forty years ago. He doubted whether there is a man today who cultivates 1,400 varieties of roses. In his opinion, there are very few old roses equal to the new. Gen. Jacqueminot is good in many respects, but it is not the rose to stand. There are few old roses that retain their popularity as this has done. Gen. Duc d'Aumale is better. John Hopper, which has been in cultivation for many years, is one of the best. The speaker said he sought for quality before anything else. There is a great difference in the habit and vigor of the different varieties. Many condemn a rose from one year's trial. Unless one watches and keeps the run of the new roses, he cannot speak of them with justice. He saw at Weegan

Brothers', in Jersey Heights, six houses full of Gen. Jacqueminots on their own roots, and when he asked why they did not cultivate other varieties, they replied that they knew nothing of any others, as grown for market. Mr. Comley thought he could produce as many Baroness Rothschilds as Gen. Jacqueminots, under the same conditions. Almost every Hybrid Perpetual rose produces its flowers singly. The Tea blood makes them flower more freely, but they require more care to ripen the wood. When at Bowood, he used to bud two thousand roses annually. Some men who have not grown roses five years are more successful than others who have been engaged in rose culture for twenty-five years, or more. Many have been unsuccessful, and want to know the reason of their failure. It is not so easy to grow roses as is supposed by some; they require more care than any other plant. He made a mistake himself by leaving some of his plants out too long. He thought there had been a very great improvement in all classes of plants in the last ten years, and William Paul, of England, and Van Houtte of Belgium, would say there have been more good roses originated in that time than ever before.

Mr. Comley concluded by reading the following lists of what he considered the best twelve and best fifty Hybrid Perpetual roses, and the best twelve and best thirty tender roses. Most of the Perpetuals had been tested out doors, and proved hardy, but how hardy he did not undertake to say.

Twelve Hybrid Perpetual roses.

Abel Carrière,	Horace Vernet,
Alfred Colomb,	Jean Liabaud,
Baroness Rothschild,	John Hopper,
Boule de Neige,	Monseigneur Fournier,
Duke of Edinburgh,	Paul Neron,
Gen. Duc d' Aumale,	Rev. J. B. M. Camm.

Fifty Hybrid Perpetuals, the above and

Beauty of Waltham,	Elie Morel,
Boïeldieu,	Étienne Levet,
Captain Christy,	Fisher Holmes,
Charles Lefebvre,	Gen. de Cissy,
Duchesse de Vallombrosa,	Gen. Jacqueminot,
Dupuy Jamain,	Henry Bennett,

Jean Soupert,
John Fraser,
John Keynes,
John Stuart Mill,
Lord Clyde,
Louis Van Houtte,
Mabel Morrison,
Mlle. Emilie Verdier,
Mme. Alfred de Rougemont,
Mme. Boll,
Mme. Eugénie Verdier,
Mme. Prosper Laugier,
Mme. Scipion Cochet,
Marie Baumann,
Marie Rady,
Marquise de Castellane,
May Quennel,
Mons. E. Y. Teas,
Oxonian,
Perfection de Lyon,
Prince Camille de Rohan,
Queen of Waltham,
Reynolds Hole,
Sir Garnet Wolseley,
Triomphe de France,
Victor Verdier.

Twelve Tender roses.

Alba Rosea,
Belle Lyonnaise,
Catherine Mermet,
Climbing Devoniensis,
Gloire de Dijon,
Mme. Talcot.
Maréchal Niel,
Marie Ducher,
Niphetos,
Perle de Lyon,
President,
Souvenir de Malmaison.

Thirty Tender roses, the above and

Anna Ollivier,
Bon Silene,
Comtesse Riza du Parc,
Isabella Sprunt,
Jean Pernet,
La Sylphide,
Letty Coles,
Louis Richard,
Mme. Celina Noirey,
Mme. de Tartas,
Mme. Lambard,
Mme. Willermoz,
Perle des Jardins,
Royal Tea,
Safrano,
Souvenir de Paul Neron,
Souvenir d' un Ami,
Triomphe de Rennes.

John B. Moore said that he had never been engaged very extensively in rose culture, and had only gone into the cultivation of the Hybrid Perpetuals within the last ten years. He had found them so superior to the old June roses that he had discarded the latter entirely. In a lot of seventy-five plants of Hybrid Perpetuals, there was no time during the season that he could not cut roses. He had now begun to throw aside some of the finest Hybrid Perpetuals of twenty years ago, because the newer kinds are so much

superior. The Caroline de Sansal, for instance, is of no account when compared with Baroness Rothschild. It will not stand like the Baroness, and though it looks very pretty early in the morning—there is no time when roses are so beautiful as at sunrise—it opens only semi-double. He cultivates Moss roses as well as Hybrid Perpetuals, but cares little for the Prairie roses, for they are destitute of odor, and their individual flowers will not bear examination, though they look very pretty when covering an arbor.

It has been recommended to make borders for roses, composed of one half sods and the other half manure, but no man can grow as good roses in such a border as in good soil twenty inches deep, with plenty of manure. You cannot give them too much manure. He has them on their own roots, on brier, and on Manetti, and without an exception they all do best on Manetti. Gen. Jacqueminot will do very well on its own roots. The Manetti stock is best adapted to a sandy soil like his, which would not be called a naturally good rose soil, a strong loam being preferred. Some kinds will make six feet of wood as quickly as others will make three or four. He would plant roses about three feet apart each way.

The most important point in cultivating roses in houses is to have good, ripe wood. He has succeeded with them, but cannot tell just how it is done. He exhibited a rose grafted on a dormant Manetti stock in the cellar last December, the stock not being established in the pot. In root-grafting apples and pears he used to tongue the stock and scion, which made them stay more firmly, and the liquid grafting-wax would harden and hold them ; but when he came to roses he found that, though he could tongue the stock, the scion was too pithy to allow of it. He therefore made a splice graft with a shoulder on the scion, and left a little square place at the top of the stock to fit into the shoulder, which made it much easier to tie than a plain splice. He thought that if one-half grew it would be as much as he could expect, and the stocks of those which failed would not be lost. He placed them in a disused cistern where it was warm, and about one-half grew. Scions from wood under cover, which had not been exposed to frost, grew much better than those just cut from the garden. Some of the varieties produced blooms, which sold for six dollars per dozen. He thought Captain Christy not quite hardy ; it has a good deal of Tea blood, and La France the same. Victor Verdier is good out-doors, but there are some superior. Marguerite de St. Amand should not

be left out of any list, but it is better for out-door culture than for forcing. Mrs. Laxton, judging from one bloom, is very beautiful. There are many new ones which will require to be tested. He does not see but the newer kinds are as hardy generally as the older.

Charles M. Hovey wished to speak of new roses and to correct an impression entertained by some that he had said that there had been no improvement in roses for many years. The reason he had not exhibited roses for the last five years was that he disliked the method of exhibiting them in boxes of moss, as now required by the rules of the Society at the Rose Show. Mr. Moore and Mr. Tailby both showed fine roses at the recent exhibition, and they were well displayed in glass vases instead of resting on a bed of moss, and were a credit to the Society. Exhibiting roses in boxes is one of the bad English systems, denounced by Dr. Lindley in the "Gardeners' Chronicle," as devoid of all taste, and introduced here where we should lead, and not follow such a barbarous abuse of the Queen of Flowers.

Mr. Hovey here read memoranda showing the large number of prizes for roses taken by him from 1843 to 1865, and especially claimed that he had taken the highest prize for sixteen consecutive years, which no other member of the Society had done, and this too in competition with the great rose growers of those days. He also exhibited the invoices of roses imported by him from Messrs. Vibert, Laffay, Verdier, and other eminent French culturists, from 1842 to 1858, including sixteen or eighteen hundred varieties, and said that many of the old roses are as good as many of the newer sorts.

Mr. Hovey read from the "Gardeners' Chronicle," Vol. XII, new series, page 55, the names of roses exhibited in England, to show that the prizes were taken by collections containing a large proportion of old varieties.

For more than thirty years he recorded in the Magazine of Horticulture the progress of rose culture and the improvement of varieties. The old Cabbage rose is still extensively cultivated in England. He would not follow the English in everything. Because the English raise their pinks and bouvardias in pots, that is no reason that we should do so when we can plant them in beds and raise them by the thousand. Pot culture is not the only culture of roses. Notwithstanding the skill of the many good English

gardeners around Boston, they cannot compete with the Yankee farmers in raising either roses or rose bushes. A farmer in New Hampshire raises the best roses, as well as the largest quantity, of any person in New England, and two old Pennsylvania farmers raised 200,000 rose bushes.

In England budded roses will stand, but here they do not do so well. Mr. Hovey quoted Mr. Parkman's opinion (Book of Roses, page 74), that in "nine cases out of ten, roses are best on their own roots," and showed a specimen of a rose five or six years old on its own roots, and a layer, which he said was but one year old, and was Nature's method of propagating roses; also the dead stock of a grafted rose to show the danger of suckers growing up and choking the graft, and a budded rose which he bought in London. Budding is the best plan if it is desired to propagate roses rapidly, and Mr. Comley and Mr. Moore are so far right, but the speaker had failed to see that all do best grafted. He had shown flowers of La Reine six inches in diameter from plants on their own roots, and he has a Solfaterre with a stem three inches in diameter and sixty feet long, and a very large Safrano,—both on their own roots. Grafting roses is a mere matter of fancy, but it is well to understand what they will do and what they will not do. It is the simplest thing to grow roses if they have a house to themselves and are not steamed up. There is nothing finer than such old Roses as Paul Perras and Chénédolé.

Mr. Moore, in answer to Mr. Hovey's quotation from Mr. Parkman, stated that Mr. Baker, the champion rose grower in England, would not have roses except on Manetti stocks. What Mr. Hovey had said about the old roses is true with regard to Teas, of which the old ones are good. There were probably many synonyms in Mr. Hovey's catalogue of 1400 names. Mr. Moore acknowledged that Mr. Hovey had done a great deal for horticulture, and desired to give him credit for it. In regard to the 200,000 roses propagated by the two Pennsylvania farmers, Mr. Moore said that they were cuttings of green wood which are a long time in getting sufficient strength to produce good flowers. A strong graft will produce a dozen flowers in a year, when the cuttings would not do it in three years.

Aaron D. Capen mentioned the two splice-grafted plants shown last week in five inch pots, and asked whether the cuttings grown in two inch pots would not have done as well as the grafts if they had been in as large pots.

Mr. Comley replied that they would not. If a cutting is taken off and planted at the same time that a graft is inserted, it will be three times as long in making a callus as the graft will be in uniting.

E. W. Buswell said that he had examined the roots of the cutting and they had not filled the small pot in which it was planted, and it would therefore be improper to give it a larger one.

The discussion of rose culture was concluded here, and the best method of conducting the meetings for discussions was taken up.

Leander Wetherell thought it should be a rule that no debater has a right to quote a private conversation in reply to public remarks. Another point is that all personalities or personal reflections should be avoided. The old and the new are essential to each other; we are today largely indebted to our ancestors for what they have done for us, and we have heard today good remarks both from the older and the younger members of the Society. The great defect in our discussions is the want of accurate and careful observation. There is more or less of jealousy in all professions. Our purpose should be to select men who understand the subjects of which they speak, and not men who come here to advertise their goods. A man who thoroughly understands his subject is always welcome. He believed that every skilful rose grower kept back something; he had found gardeners the hardest men to get secrets out of, and he commended them for it. He trusted the discussions would be conducted in such a way as to bring out practical knowledge, so far as cultivators feel at liberty to impart it.

John B. Moore thought we had not come up to the best method in conducting these meetings. It should be a rule that no one should speak more than ten minutes at a time, or more than once on the same subject without permission. In farmers' clubs, which he had attended, the first half-hour was occupied by two leaders who were appointed beforehand and were expected to prepare themselves to take different sides of the subject assigned. This gave a right direction to the discussion. Speakers should be held strictly to the subject before the meeting, and all personalities should be avoided.

William H. Hunt agreed with Mr. Moore that speakers should be held more strictly to the subject than they generally had been, if we wished to derive the greatest advantage from the meetings.

The Chairman remarked that questions of interest suggested by the exhibitions often sprang up during the meetings, which rendered

it difficult to confine the discussions closely to the subject assigned. The plan of opening the discussions by speakers appointed beforehand was excellent, but the Committee had found it extremely difficult to obtain speakers.

Mr. Moore replied that subjects came up in the same way in farmers' clubs, and that the proper way of meeting them was either to suspend the subject assigned or postpone the new one.

Mr. Wetherell thought that all speakers on side issues should be strictly ruled out of order.

Mr. Moore thought credit was due the Chairman for originating these discussions, when President of the Society, and for his constant efforts to sustain and improve them. He did not intend to cast any reflection on the Committee on Publication and Discussion, and did not believe the Society could select a better committee.

The meeting then adjourned *sine die*.

MISCELLANEOUS PAPERS.

The following papers, on Seedless Fruits, by Dr. E. L. Sturtevant, and a Calendar of the Flowering of Trees and Shrubs in 1880, by John Robinson, though not of a character for reading at the meetings of the Society, are deemed by the Committee of so much interest and value that they have much pleasure in adding them to the Transactions. Professor Robinson's Calendar is much fuller than any previous one, and he has encouraged the Committee to hope for a continuance of it in future years.

The Committee have also added a few letters which have been suggested by the discussions of 1879, and they would take this opportunity to acknowledge the obligations of the Society to the writers.

SEEDLESS FRUITS.

BY E. LEWIS STURTEVANT, M. D., SOUTH FRAMINGHAM, MASS.

Seeding is not an essential characteristic of individual plants, nor, under peculiar circumstances, even of whole groups of plants. We not only find in Nature productiveness varying among species, but often complete barrenness. Thus Brandis* states that the seeds of *Bambusa arundinacea*, Retz, and other species, have often saved the lives of thousands in times of scarcity, as in 1812 in Orissa; 1864 in Canara, and 1866 (probably *B. Tulda*, Roxb.) in Malda, while *B. Balcooa*, Roxb., he has never seen in flower. Humboldt† states that the *Guadua* in South America blossoms very rarely, and says that it is a very striking fact that some plants grow with the greatest vigor in certain localities without flowering, as is the case with the European olive trees introduced into America centuries ago and growing near Quito at elevations of about 9600 feet above the sea level. Bojer‡ states the same fact for the walnut, hazel-nut, and the fine olive trees of the Isle of France. The sugar cane, according to various observers, says Darwin,§ never bears seed in the West Indies, Malaga, India, Cochin-China, and

* Forest Flora, 566.

† Views of Nature, Bohn's ed., 335.

‡ Hortus Mauritianus, 1837, 201.

§ An. and Pl., II, 206, N.Y. Ed., 1868.

the Malay Archipelago. Fleischmann,* however, speaks of a West Indian cane bearing seeds, but these did not sprout. The sweet potato has never flowered in my garden in Massachusetts; it, however, is cultivated for its flowers, as well as for its root, in India,† but Mr. Fortune informed Darwin‡ that in China, so far as he had seen, it never yields seed. *Citrus aurantium*, Riss. et Poit., in Lower Bengal does not fruit at all, or does not bear freely. *Millingtonia hortensis*, L., seeds very rarely in North India, and the Indian *Populus alba*, L., does not often flower, according to Brandis.§ *Agave vivipera*, when grown in rich soil, invariably produces bulbs but no seeds, according to Dr. Royle.‖ *Dioscorea aculeata*, L.,¶ is said never to flower or fruit. Firminger** states that the quince had been in the Calcutta Botanic Garden for twenty years, and had never blossomed. Dr. Riddel states that the tree blossoms in some localities but does not produce fruit. Pear trees brought from America have blossomed abundantly every year, but nothing more, and apple trees, brought likewise from America, have blossomed often, but if they have set fruit, it has been only to drop it immediately afterwards. On the slopes of the mountains of Mexico, at Xalapa, says Humboldt,†† wheat does not form ears. Many alpine plants ascend mountains beyond the height at which they can produce seed. The *Acorus Calamus* extends over a large portion of the globe, but so rarely perfects its fruit that this has been seen by but few botanists. *Lysimachia Nummularia* so seldom produces seed-capsules, that Decaisne, who particularly studied this plant, has never seen it in fruit. The horseradish rarely perfects capsules.‡‡ Dr. E. Bornet, of Antibes, informed Darwin§§ that in hybrid *Cisti* the ovarium is frequently deformed, the ovules being in some cases quite absent, and in other cases incapable of fertilization. Darwin‖‖ also states that when stamens are converted into petals, the plant becomes on the male side sterile; when both stamens and pistils are thus changed the plant becomes completely barren. For this reason, double portu-

* U. S. Pat. Of. Rept., 1848, 283.
† Firminger, Gardening in India, 511, 157.
‡ An. and Pl., II, 206.
§ Forest Flora, 53, 347, 474.
‖ Trans. Linn. Soc., XVII, 563.
¶ Seemann, Flora Vitiensis.
** Gard. in India, 245.
†† Travels, Bohn's ed., I, 498.
‡‡ For other instances see Darwin, An. and Pl., II, 207, 208.
§§ An. and Pl., I, 467.
‖‖ Ib., II, 204.

lacas have a great paucity of seed, and according to Breck * hardly a capsule of seed is to be found on a plant. In India, *Hibiscus Rosa-Sinensis*, according to Firminger,† is never known to produce seed, and this is also the case with *H. liliiflorus*.

Other instances of plants not producing seeds are to be found amongst the diœcious species when the two sexes borne on different plants are separated. Thus Theophrastus,‡ in the fourth century before Christ, observed that palm trees do not bear fruit unless the females are fecundated by the dust contained in the flowers of the male, and that in Greece the palm trees raised for the ornament of gardens bear no dates, or at least never bring them to perfect maturity. This process of fertilization, according to Stocks,§ is now performed in Sindh, in Arabia, and elsewhere, by making a hole in the sheath of the female flower, before the flower-sheaths open, and placing therein a few bits of the male panicle.

These illustrations seem to be sufficient to establish our proposition that seeding is not an essential characteristic of plants; that plants in nature and under art, *can* flourish, and yet, as a general thing, produce no seed, and hence it is *a priori* probable that the habit of producing seed can be changed, amended, or destroyed through the artificial processes involved in the act of domestication and cultivation.

Further, seed-bearing seems but a device for the propagation of plants, and in nature is so general a characteristic, because offering such a valuable provision for the action of natural selection in perpetuating the species. It is only when some other provision takes the place of this device of seeding, that a barren plant can exist as a species. Hence, in those cases where propagation is more readily effected in other ways than by seed, we observe a lessening of fertility, and an approach to or a complete barrenness. Perhaps we should add, although really included in the above, that the conditions of life affecting the new plant, may determine against the seedling and in favor of the bulb, the tuber, the runner, or the offset. The antithesis to natural selection is that useless parts have a tendency to disappear, and hence as the seed loses its importance, it is apt to lose its functions and identity. This fact is otherwise expressed by Goethe and Geoffrey St. Hilaire, viz, that when one part of a plant is unduly nourished, other parts

* New Book of Flowers, 39.
† Gard. in India, 412.
‡ Hist. Plant., Lib. 2; Lib. 3, cap. 5.
§ Hooker's Jour. of Bot., VII, 551.

become reduced, and this is called the law of compensation or balancement of growth.

Thus, the potato ceases to produce seed-balls freely as the tubers become improved by cultivation, as is generally known, and is especially illustrated in the experience of the well-known propagator, C. E. Goodrich.* The Bogota potato, when first introduced, bore small tubers, and was covered with fruit; twenty years later it produced enormous tubers, but did not even set, much less perfect seed. Thomas Andrew Knight† says he has shown that the cause why early varieties of the potato do not afford blossoms, is the preternaturally early disposition of the plant to generate its tuberous roots. The varieties of radish, says De Candolle,‡ with small roots, yield numerous seeds valuable for containing oil, whilst the radishes with large roots are not productive in oil-bearing seeds. In one instance, I removed a young beet plant, a biennial, from a rich to a sterile soil, and subjected it to conditions interfering with its vigor, and the root grew to but small size, but a seed-bearing shoot was thrown up. In several instances by continually checking the growth of the cabbage by quite frequently pulling upon the small plant until I could feel the fibres of the root yield I produced rapid "heading," and the appearance of the seed-stalk the first year. The maize plant, under excessive manuring, I have found to grow with great luxuriance, and to be productive mostly of deformed ears of grain, and but a small crop. To make European vegetables under the hot climate of India yield seed, says Ingledew,§ it is necessary to check their growth, and when one-third grown, they are taken up, and their stems and tap-roots are cut or mutilated. Prof. Lecoq‖ had three luxuriant and sterile plants of *Mirabilis*, but after beating one with a stick until only a few branches were left, these at once yielded good seed. Seedling fuchsias, says Burbidge,¶ if starved, frequently flower when only an inch or two in height. M. J. Berkeley** says that those persons who undertake to supply good turnip seed, check the luxuriance of the roots by repeated transplanting, as it is found that seeds raised from the finest roots produce plants which have a tendency to make a luxuriant head rather than a large and sound root.

---

* Trans. N. Y. Ag. Soc., 1848, 418.
† Hort. and Phys. Papers, 321.
‡ Mem. du Mus., VII, 178, quoted by Darwin, An. and Pl., II, 412.
§ Trans. of the Agri-Hort. Soc. of Ind., II, quoted by Darwin.
‖ De la Fécondation, 1862, 308, quoted by Darwin.
¶ Cultivated Plants, 91.
** Treas. of Bot., II, 1082.

Joseph Harris, of Rochester,* says "You can raise more plants from an ounce of *poor* cabbage, onion, lettuce, carrot, parsnip, and beet seed than you can from an ounce of the best and choicest," as there seems an antagonism between the functions of seed production and of growth. John Morrison† writes that there are numerous instances where turnips, when young, have received a check by frost, and run to flower instead of bulbing. The *Solandra grandiflora*, a Jamaica shrub, for years grew vigorously in English stoves, without showing any signs of fructification. By checking the luxuriance of the growth it is now caused to flower abundantly.‡ An analogous illustration is the surprise expressed by Koelreuter§ that sterile hybrids show a strong tendency to develop gigantic or tuberous roots, and almost invariably tend to increase largely by suckers, etc.

These are sufficient illustrations of antagonism of growth between root development and seeding, and leaf-growth and seeding. We will now pass to the antagonism that appears to exist between the development of the various parts of the fruit, confining ourselves to the species which are normally, or in varieties, or individually, seedless, and using the term fruit in the cultural, and not in the botanical sense.

The Apple, *Pirus malus*, L., is a fleshy fruit consisting of the ovary and calyx. The outer skin, or epicarp, is composed of the epidermis of the calyx combined with the ovary; the fleshy portion is the mesocarp, formed by the cellular portion of the calyx and ovary; while the scaly layer forming the walls of the seed-bearing cavities in the centre, is the endocarp. The carpels lie in the centre of the fruit, and form the core, while the edible pulp is formed by the calyx, which is adherent to the exterior of the ovary. The calyx is a modification of the leaf structure, or morphologically is related to the leaf.

The better varieties of the apple usually contain some abortive seeds, and are individually to be found seedless. As a rule, to which as yet I have noted no exceptions, the larger the apple the greater the number of abortive seeds. Thus five Baldwin apples,

* Seed Catalogue for 1880, p. 1.

† Prize Essays Highland Soc., 4th Ser., II, 101.

‡ Quarterly Journal of Agriculture, I, 294.

§ Bastarderzegung, 5, 527, quoted by Darwin.

weighing thirty ounces, had eleven plump and nine abortive seeds; five other Baldwins from the same barrel and weighing seventeen ounces, furnished twenty-five plump and three abortive seeds. It also appears to be a fact that in general the improved varieties of apples contain fewer seeds and a larger proportion of abortive seeds than do wilding apples; and there is strong reason to suppose that apples of high quality, especially if ripening up soft, contain fewer plump seeds than do inferior varieties, but I have noted exceptions. Lunan* says that in Jamaica the fruit seldom contains seed, and no apple yet introduced thrives. The curious St. Valery apple in France, says Darwin,† although it bears fruit, rarely produces seed. At the Massachusetts Horticultural Society's Exhibition in 1834, a curious apple produced without blossom, and having neither core nor seed, was exhibited.‡ Mr. Knight§ grafted the apple upon a pear stock, and the fruit thus obtained had not a single seed. In a case reported in France of a seedling apple, one half of which was red and acid, the other half green and sweet, there was said to be scarcely ever a perfectly developed seed.‖ Individual apples are frequently seen with all the seeds abortive, and the Romans are said to have had one sort without kernels.¶ Yet in these instances of seedless fruit, we have but a hint of improvement in quality accompanying barrenness.

The Banana is a prominent instance of a seedless fruit. The fruit is composed of three adherent carpels, surrounded by the external coat of the ovarium. It belongs to the genus *Musa*, and is conveniently described as forming a number of species. This fruit, according to Humboldt,** has been constantly cultivated as far as history and tradition extend, in all continents within the tropical zone. As is well known, it rarely produces seeds. On the coast of Paria, however, near the Golfo Triste, the banana is said to occasionally produce germinating seeds if the fruit be allowed to ripen on the stem. At Bordones also, near Cumana, perfectly formed and matured seeds have been occasionally found in this fruit. In the Province of Cercado, on the Amazon, "there is an enormous amount of kinds or varieties of bananas which produce in the year from seed."†† It is doubtful whether this does not

* Hort. Jam., I, 24.
† An. and Pl., II, 203.
‡ Hist. Mass. Hort. Soc., 234.
§ Phys. and Hort. Papers, 222.
‖ Loudon's Gard. Mag., XIII, 230.
¶ Hort. Trans., I, 152.
** Views of Nature, 305.
†† Castelnau's Travels.

refer to the yield from the planting of suckers, however. Meyen* states that at Manilla one variety of the banana is full of seeds. Capt. Cook arrived at Batavia in December, 1770, and describes the bananas there. After mentioning several varieties he says "there is one which deserves the particular notice of the botanist, because, contrary to the nature of its tribe, it is full of seeds. . . . It has, however, no excellence to recommend it to the taste, but the Malays use it as a remedy for the flux."† Burton‡ says of Central Africa that the best fruit plantain is that grown by the Arabs at the Unyamyembe; it is still a poor specimen, coarse and insipid, stringy and full of seeds. . . . Upon the Tanganyika lake there is a variety called "Mikono t'hembro" or Elephant Hands, which is considerably larger than the Indian "Horse Plantain." The skin is of a brick-dust red, in places inclining to rusty brown; the pulp is a dull yellow, with black seeds, and the flavor is harsh, strong, and drug-like. Roxburgh § says the original wild *Musa* from which all the cultivated varieties of both plantain and banana proceed, bears numerous seeds. The fruit is soft and pulpy. In the Himalaya, Hooker‖ mentions two species that ripen austere and small fruits, which are full of seeds and quite uneatable. The fruit of *M. ensete*, Bruce, is not palatable and is rarely eaten, and contains a few large stony seeds. It is grown in large plantations, in Abyssinia, for the inner part of the stem and the young spike, which are served as a table vegetable.¶ *M. glauca*, Roxb., of Pegu, never produces suckers. The fruit contains little else than seeds, not fit for a monkey to eat.** *M. Nepalensis*, Royle, is found in Nepal, growing apparently in a wild state, and the fruit containing little else than the hard dry seeds.†† *M. superba*, Roxb., a native of Southern India, ripens seed which is fertile. The fruit is of no use; when ripe it is more like a dry capsule than a berry. It never produces suckers.‡‡

The seedless species are: *M. Arakanensis*. The fruit of this

---

* Reise um Erde, II, 214, quoted by Darwin.

† Cook's Voyages, I, 304.

‡ Lake Regions of Central Africa, 316.

§ Coromandel Plants, plate 275.

‖ Himalayan Journals, I, 183.

¶ Unger, U. S. Pat. Of. Rept., 1859, 352. Masters, Treas. of Bot., II, 765.

** Roxburgh, Coromandel Plants, pl. 300.

†† Royle, Illust. of the Bot. of the Himalaya Mts., 355.

‡‡ Roxburgh, Coromandel Plants, III, 18, 96.

plantain is one of the best there is; the old trees yield particularly fine fruit. In 1857, eighteen varieties were sent to the Agri-Horticultural Society of India.* *M. Chinensis*, syn. *M. Cavendishii*, is a very rich and delicious fruit, now grown in Florida, and the variety best suited for greenhouse culture. *M. paradisiaca*, of the Siamese countries, has many varieties.† *M. rubra* is the "Vai" of Cook, and the "Fahie" of Wilkes. The fruit, which grows upright, is of a deep golden hue with orange-colored pulp, destitute of seeds, tasting like the common banana but of a higher flavor, and very popular with the natives of Tahiti.‡ "The Ram Kela," of India, has fruit of a very dark red, ripening to a yellowish red, remarkably fine.§ *M. Fei*, the "fei," a wild plantain of Tahiti, of which there are five varieties, is usually eaten either roasted or boiled.‖ *M. sapientum*, the species to which some botanists refer all the others as varieties, has many varieties. Firminger¶ describes seven in culture about Calcutta. Simmonds** says there are twenty varieties in Tenasserim, ten in Ceylon, and thirty in Burma. In Madagascar the plantains are about as large as a man's arm. The "Staff of Life" in Central Africa has about a dozen varieties. Burton†† says it is "scarcely ever eaten in the ripe state, save by the females who extract from it an unfermented and delicious liquor."‡‡ Grant §§ says it is the staple food of the countries one degree on either side of the equator. There are half a dozen varieties,—the boiling, baking, drying, fruit, and wine-making sorts. The dried fruit from Ujiji is like a Normandy pippin. At Tongataboo, Cook found fifteen different varieties,‖‖ and at Atooi, in February, 1778, at least five or six varieties.¶¶ Acosta*** says "there is a kind of small planes, white and very delicate, which in Hispaniola they call Dominiques. There are others which are stronger and bigger, and red of color." This seems to be the *M. maculata*, Jacq., and *M. regia*, Rumph. Humboldt says††† the *Musa* has as great a variety of fruit as our apple and pear trees. *M. troglodytarum*,

---

* Firminger, Gard. in India, 181.
† Pickering, Chron. Hist. of Pl., 277.
‡ Wilkes, U. S. Exp. Ex., II, 28.
§ Firminger, Gard. in India, 180.
‖ Voy. of the Novara, III, 263.
¶ Gard. in India, 177.
** Trop. Agr., 457.
†† Lake Regions of Central Africa, 316.
‡‡ Long, Cent. Africa, 126.
§§ Speke's Nile, 583.
‖‖ Cook's Voyages, II, 127.
¶¶ Ib., II, 246.
*** Natural and Moral Hist. of the East and West Indies, Eng. Trans., 270.
††† Travels, I, 49.

L., syn. *M. uranoscopus*, Rumph., of India and the Pacific Islands, has fruit, like *M. rubra*, on upright stalks, small, reddish or orange colored, and edible.*

These statements bear out Balfour's inference† that in the case of bananas and plantains, the non-development of seeds seems to lead to a larger growth, and a greater succulence of fruit, and we might add quality also.

The BARBERRY, *Berberis vulgaris*, has a stoneless variety called Vinetier Sans Noyau by the French, but the plant frequently produces berries with seeds, as Downing‡ observes. R. Thompson§ says this stoneless fruit often occurs on old plants, and a celebrated conserve is made from it at Rouen, France. I have occasionally found seedless fruits on hedge plants in Maine. This fruit is botanically a berry with a few seeds.

The BEECH tree, *Fagus ferruginea*, Ait., I have never known to produce nuts with a kernel, in Framingham, Mass. It forms the sterile fruit often in great abundance. I am told, however, that in groves it sometimes perfects the nut.

The BREAD-FRUIT, *Artocarpus incisa*, L. fil. The edible portion is formed by the cohesion into a single mass, of the floral envelopes and ovaria of a large number of flowers, arranged on a central fleshy column or spike. It is nowhere met with growing wild, (?) and has been distributed from the Moluccas, by way of Celebes and New Guinea throughout all the islands of the Pacific Ocean, to Otaheiti. It is also naturalized in the Isle of France and tropical America,‖ and bears fruit in Ceylon and in Burma.¶ On a single Polynesian island twenty-four varieties are enumerated, as Darwin** writes. In Otaheiti, writes Lunan,†† they reckon eight varieties without seeds, and one variety with seeds is inferior to the others, and this sort is not good unless it is baked. The seeds are said by Wilkes‡‡ to be often abortive in Tahiti. The natives of the Pacific Islands possess, says De Candolle,§§ many varieties, notably

---

* Mueller, Select Plants.
† Botany, p. 261.
‡ Fruits, ed. of 1866, 284.
§ Treas. of Bot., I, 136.
‖ Unger, U. S. Pat. Of. Rept., 1859. 315.
¶ Brandis, Forest Flora, 426.
** An. and Pl., II, 309.
†† Hort. Jam., I, 113.
‡‡ U. S. Exp. Ex., II, 50.
§§ Geog. Bot., 919.

those whose fruits are without seeds, which indicates a very ancient culture. M. Sonnerat, found in the Philippines, the bread-fruit wild, and bearing ripe seeds of a considerable size*. The plants are propagated by cuttings. They may also, says Williams,† be increased by suckers, which are produced abundantly in their native countries.

The Cherry, *Prunus*, sp. is formed by a change in the substance of the carpellary leaf. The internal surface of this becomes hardened into the stone (the endocarp), whilst the external (epicarp) remains as a thin cuticle or skin, and the pulp of the fruit (the mesocarp) is formed by the increase of the parenchyma or fleshy tissue of the leaf. Robert Manning, a skilled and accurate pomologist, informs me that the cultivated cherries have the seeds generally abortive. This is not always the case, however, as Prince's Duke was raised by Mr. Prince, of Long Island, from a seed of the Carnation,‡ and it is doubtless true that our principal varieties have originated from seeds of the cultivated kinds. Mr. Knight§ crossed the Morello and common cherry. From many thousand blossoms, five cherries were produced, and four of these did not contain seeds. The quality was excellent.

The Chestnut, *Castanea vesca*, L., does not readily and abundantly ripen its fruit in the immediate neighborhood of the sea, in Massachusetts, says Emerson.‖ Abortive nuts are very common in the burrs, and frequently in Framingham all the fruits on the tree are abortive. In the Chestnut, the abortion of some of the ovules seems to be an invariable and normal process.

The Cucumber, *Cucumis sativa*, L. The fruit consists of three carpels united together and forming one cell, but having the ovules arranged on three lines which pass up the sides.¶ Seedless cucumbers are mentioned by Loudon** as being grown purposely from unfertilized flowers on account of their more desirable quality. William Saunders, now superintendent of the garden and grounds of the Department of Agriculture, at Washington, tells me that

* Foster's Obs., 179, note.
† Choice Stove and Greenhouse Plants, II, 109.
‡ Downing, Fruits, ed. 1860, 274.
§ Phys. and Hort. Papers, 277.
‖ Trees and Shrubs of Mass., ed. of 1846, p. 165.
¶ Carpenter, Veg. Phys., Bohn's ed., 411.
** Horticulturist, 495.

this is a well-known custom, and E. F. Bowditch, of Framingham, Mass., has grown this seedless fruit in his cucumber house. The melon, which I have largely grown, I have never known to be seedless, but it is a matter of common observation with me that the fruits of the highest flavor and excellence are apt to contain fewer seeds than others of the same variety but diminished quality.

The DATE, *Phœnix dactylifera*, L. The epicarp is the outer brownish skin, the pulpy matter is the mesocarp, and the paper-like lining is the endocarp covering the hard seed. The tree is diœcious, and the female tree is fertilized artificially. Nineteen-twentieths of the population of Fezzan live on dates during nine months of the year. More than fifty varieties are there known, according to J. Richardson.* At Mooltan, P. Edgeworth states that there is one date tree called "Bedana" which bears a stoneless fruit, and in former times it was considered a royal tree, and the fruit was reserved for the reigning sovereign.† In the deserts of North Africa, the date palm has yielded, as Vogel‡ states, thirty-eight varieties.

The DIOSPYROS genus which includes the persimmon has occasionally seedless varieties. Forsyth§ mentions a cultivated variety of *D. melanoxylon*, Roxb., as being without stones. E. J. Wickson, editor of the *Pacific Rural Press*, writes me that some Japan persimmons, *D. Kaki*, L. fil., bear seedless fruit the first year; the second year seeds appear. "I cut one last week," he says (February, 1880), "ten and three-quarters inches in circumference, without sign of seeds." In Japan there exist some fifty varieties, thirteen of which Henry Loomis‖ pronounces as constituting the leading sorts. Of these the "Yemon" has some specimens seedless, especially when the trees are young. The quality seems to be excellent—superior to many, but not equal to the "Gosho." The *Diospyros Virginiana*, L., (Persimmon) is, as William Saunders informs me, frequently seedless. Occasionally varieties are met with having fruit double the size of the ordinary kind. The best ripen soft and sweet and have a clear, thin, transparent skin without any

* Jour. Lond. Hort. Soc., 1851, 46.
† Jour. of the Agri-Hort. Soc. of India, 1867, quoted by Firminger, Gard. in India, 173.
‡ Annals and Mag. of Nat. Hist., 1854, 460.
§ Highlands of Central India, 463.
‖ Scientific Farmer, June, 1879, 78.

rough taste, as Porcher* says. It is not, however, yet classed, among our cultivated fruits by the American Pomological Society. I. M. Pearson† says, "I have seen some of our native kinds without any seeds, of which the fruit was delicious."

The Fig, *Ficus Carica*, L., is an anthocarpous fruit, in which the axis, or the extremity of the peduncle, is hollowed, so as to bear numerous flowers, all of which are united in one mass to form the fruit. Dr. Presl‡ enumerates no less than forty varieties which are cultivated in Sicily. Dr. Robert Hogg § enumerates sixty-five varieties of figs. Even in the United States, one leading nursery firm offers twenty-five varieties in its list.‖ There are forty-two varieties enumerated in the London Horticultural Society's Catalogue,¶ and eighteen in the American Pomological Society's Catalogue of 1877. Many kinds of fig, says Brandis,** attain maturity with sterile seeds—that is, seeds in which the embryo has not been developed, and therefore fecundation is not an essential condition to the ripening of figs. The cultivated fig tree bears two sorts of fruit; in the spring early figs or "fiorones," and in the summer late figs which ripen in the autumn. In the "fiorones" male flowers are very rarely found, and the few which may be present cannot serve for fecundation, for they do not make their appearance until long after the female flowers, nor until the stigmates of the latter are dried and destroyed. Whether it be owing to this or some other cause, I have never yet, says Prof. Gasparrini, been able to find seeds with embryos in the "fiorones." The summer fruits on the contrary, have no male flowers, and yet a large proportion, I may say nearly all, of their ovaries become perfect—that is, furnished with embryos.†† It is for this reason Gasparrini is led to suppose that the embryo of the fig seed is developed without previous fecundation.

The Grape, *Vitis*, sp. is botanically a berry, an indehiscent fruit which is fleshy or pulpy throughout. The seeds nestle in pulp formed from the placentas. The berry is formed from the

* Resources of the Southern Fields and Forests, 387.

† Trans. Ill. Hort. Soc., 1878, 87.

‡ John Hogg, Hooker's Journ. of Bot., I, 182.

§ Fruit Manual, 3d ed., p. 102.

‖ Ellwanger & Barry, Desc. Cat. of Fruits, 1880.

¶ Downing, Fruits, 1866, 290.

** Forest Flora, 419.

†† Ann. des. Sciences, Sec. 3, Tom. V, p. 306.

ovaries alone. The ancients claimed a method of producing seedless grapes, which is thus given in the "Travels of Anacharsis":* "To obtain grapes without stones, you must take a vine-shoot and cut it lightly in the part which is to be set in the ground; take out the pith from this part, unite the two sides separated by the incision, cover them with wet paper, and plant it in the earth. The experiment will succeed better if the lower part, thus prepared, be put in a sea-onion before it is planted. Other methods are known to produce the same effect." As erroneous as this advice may seem, yet in the present age, Firminger, in a communication to the Agri-Horticultural Society of India,† says that he was informed by R. Solano, of Shahabad, that by scooping out the pith of the Litchi, the result was, the stone of the fruit became much lessened and the pulp consequently more abundant, and considerably improved in flavor. He also stated that a like result was produced on the grape vine in Spain. Gen. J. Jenkins also communicated to Mr. Firminger the following method of preventing the formation of seeds in guavas; "Take a young tree, split it in the middle with a carving knife, about twelve or fifteen inches up; pick out the pith, close it, cover it with earth and bind it up with straw. The tree will grow as before, but the fruit will have no seeds in them." But the general had never tried it.

In the grapery of M. H. Simpson, Saxonville, Mass., is a seedless variety of the Black Hamburg, of which I have frequently eaten the fruit. Yet even this vine occasionally produces seeds in some of the berries. William Saunders informs me that seedless grapes frequently occur in the graperies of the Department of Agriculture at Washington, when from any circumstance the pollen becomes excluded from the pistils. The Sultana grape is always a seedless variety, and is so advertised in our nurserymen's catalogues. Arnold‡ says, "In the way of eating there can be few greater pleasures than to devour the grapes of Kasveen on a hot day as one would currants in England. They are the small, stoneless grapes, which, when dried, are sold as Sultana raisins." The Zante currant is a seedless grape, and supplies the dried currants of commerce. E. J. Wickson writes me that "the

* Theoph., De Caus. Plant., Lib. 5, Cap. 5; Democr., Geopon., Lib. 4, Cap. 7; Pallad., De Re Rustic., Febr., Tit. 29; Colum., De Arbor., 9; Plin., Lib. 17, Cap. 21, T. II, p. 74; Traité de la Vigne, T. I, 29, are the references.

† Gard. in India, 170.

‡ Through Persia by Caravan, 151.

Corinth grape is quite apt to bring seeds, much to the disgust of our people in California, who are trying to make Zante currants. The Corinth does the same in Australia." The Arabians "dry a small sort of grape called 'Kishmish,' which has no stone, but only soft and almost impalpable seeds."* Ludovico de Varthema, in 1503–8, describing Reame, a city of Arabia Felix, says: "Here also is found a kind of white grape, which has no seeds within, than which I never tasted better." † The white wine of Ispahan, says Redding, ‡ is made from a small white grape called "Kismish," which has no pips, perhaps first brought from the island of that name, noted for fine fruit, near Gombron. Near Atrascan, says Pallas, § there is a grape with mere traces of seeds, so small and lying so near the stalk that they are not perceived in eating the fruit. "In Bulkh," says J. Harlan, ‖ "the sweetest and best wine grape is called 'Kishmish;' it is a black, seedless fruit, of an oval shape, about the size of a person's first thumb joint. It differs in flavor, size, and color, from the Cabul grape of the same name." Among the grapes of Cabul is the "Ungoor-i-Kishmishee," a fruit not large, round, transparent, with a slight tinge of yellow, seedless, sweet, and luscious. The grapes of Eschol ¶ "have generally a transparent membraneous seed, though some are said to have actually no seed at all, whereby, while they are chewed, no seed is discoverable to the taste or tongue, yet it is apparent when the grape is cut with a knife and seed is sought for." Le Bruyer** describes similar grapes without seed in Persia. In the Punjaub, according to Firminger, †† they have an indigenous stoneless grape, called the "Bedana."

It cannot have failed to be observed how a diminution in the size of the seed accompanies an improvement in quality in our native grapes. In the cases given, all the seedless grapes seem to be described as possessing an excellent quality. Is this a complete instance of the antagonism between seed and quality of pulp, which we have before inferred?

The Guava, *Psidium guajava*, Raddi. In this fruit the seeds nestle in pulp formed apparently by the placentas. The savory

* R. Niebuhr, Travels through Arabia.
† Travels, Hakl. Soc. ed., 77.
‡ Quoted in U. S. Pat. Of. Rept., 1860, 367.
§ Travels, Eng. Trans., I, 313.
‖ U. S. Pat. Of. Rept., 1861, 534, 529.
¶ Calmet, Dict. of the Bible.
** Quoted by Calmet.
†† Gard. in India, 212.

fruit, of the size of an apple, is highly relished, and is eaten raw or made into a conserve in the West Indies. It is covered with a rind of some thickness, within which are the seeds contained in a pulp without any shell.* The contained pulp is of white, red, or yellow color, in the varieties, full of bony seeds.† Its cultivation has been carried on by the primitive inhabitants of the main land of America, from Mexico to Brazil, from time immemorial, says Unger,‡ and it is frequently without seeds.

The KAKI. See Diospyros.

The MEDLAR. *Mespilus Germanica*, L. There is a variety called stoneless, without stones or seeds, advertised in French fruit catalogues.

The MULBERRY, *Morus alba* and *nigra*. The edible portion is formed by the cohesion, into a single mass, of the floral envelopes and ovaries of a large number of flowers, arranged on a central fleshy column or spike, the calyces becoming succulent, and investing the pericarps. This tree is but little cultivated in America, but in Asiatic countries it is in esteem. There are many varieties of *M. alba*, L., in Kashmere and Afghanistan, says Brandis,§ sweet and acid, and of all shades of color, from white to a deep blackish purple. The fruit furnishes a considerable portion of the food of the inhabitants in autumn, and much of it is dried and preserved. In Beloochistan, according to Stocks, there is a seedless variety called "Bedana." Harlan says,‖ the first fruit in the market at Cabul is the white, seedless mulberry or "Shah-toot," the thickness of the small finger. It is very sweet, and the tree is inexhaustibly prolific. In its season it forms the chief food of the poor. It is a grafted fruit. In Turkistan, the large white, almost seedless berries of the Khorasine mulberry from Khiva, both when fresh and dried, are greatly used for food.¶

The OPUNTIA *Davisii*, Engelm. Common on the upper Canadian, eastward and westward of Tucumcari Hills, near the *Llano Estacado*. All the fruit seen were sterile, and most of them elongated, one to one and a quarter inches long.**

---

* Rhind, Veg. Kingdom.
† Lunan., Hort. Jam. I, 350.
‡ U. S. Pat. Of. Rep., 1859, 349.
§ Forest Flora, 407.
‖ U. S. Pat. Of. Rept., 1861, 529.
¶ Schuyler, Turkistan, I, 196.
** Engelman, Pac. R. R. Rept., IV, Bot. 49.

The Orange, *Citrus aurantium*, is botanically a hesperidium, or a berry with a leathery rind. This fruit consists of the carpels surrounded by the external coat of the ovarium, and having the space between their inner wall and the seeds they contain filled with a very succulent cellular tissue. The rind consists of epicarp and mesocarp, while the endocarp forms partitions in the interior filled with pulpy cells which are produced from the inner lining of the pericarp. The tree has been cultivated for its fruit from ancient times, and there are many varieties. According to Dr. Presl, there are fourteen cultivated in Sicily.* Loudon mentions nineteen varieties,† Downing twelve.‡ Gallesio describes forty of the principal kinds cultivated in Italy. Among the wild oranges of Florida even, I have noticed varieties. In one grove near Matanzas Inlet, I have found and eaten an orange with sweet pulp and bitter rind, and what is worthy of mention, the seeds are fewer and smaller in this variety than in the common bitter kind. D. J. Browne§ says that in many parts of the West Indies and South America, the wild oranges occur sweet and excellent, and sour and bitter, round, flattened, rough, smooth, obovate, pear-shaped, thick and thin skinned, juicy and dry,—some with and others without seeds,—some bearing seeds at the eye, outside of the fruit, while others present a navel-like protuberence at the same point, with no seeds. E. J. Wickson writes me from California: "I would state that the Navel or Bahia orange, now growing in this State is perfectly seedless." The St. Michael orange, says Browne,‖ one of the most delicious of all the varieties, is known by its small, seedless fruit, with a thin rind, and extremely sweet pulp. Loudon¶ says this variety "is generally without seed." Downing** says "the pulp often seedless, juicy, and often lusciously sweet." Dr. Bullar†† states that the thinness of the rind of a St. Michael orange, and its freedom from pips, depend on the age of the tree. The young trees, when in full vigor, bear fruit with a thick, pulpy rind, and abundance of seeds; but as the vigor of the plant declines, the peel becomes thinner, and the seeds gradually diminish in number, till they disappear altogether. "The myrtle-leaved orange," writes

* Hogg, Hooker's Journ. of Bot., I, 106.
† Hort., 608.
‡ Fruits, ed. 1860, 691.
§ U. S. Pat. Of. Rept., 1858, 266.
‖ Trees of America, 59.
¶ Hort., 608.
** Fruits, 694.
†† Balfour's Bot., 280.

Darwin,* "in my father's greenhouse, during many years, . . rarely yielded any seed, but at last produced one; and a tree thus raised was identical with the parent." Gallesio† asserts that when he impregnated the flowers of the common orange with the pollen taken from undoubted varieties of the orange, monstrous fruits were produced, which included "little pulp, and had no seeds or imperfect seeds." A Japanese orange, "Mushin tani nashi mikaw," is said to be seedless, and the trees thornless.‡

The PEACH PALM, *Guilielma speciosa*, Mart. The "Piritou" or "Piri Jao" of the natives, writes Humboldt,§ are very extraordinary; every cluster contains from fifty to eighty; they are yellow like apples, grow purple in proportion as they ripen, two or three inches thick, and generally, from abortion, without a kernel. Among the eighty or ninety species of palm trees peculiar to the new continent, . . . there are none in which the sarcocarp is developed in a manner so extraordinary. The fruit furnishes a farinaceous substance, as yellow as the yolk of an egg, slightly saccharine, and extremely nutritious. We found it cultivated in abundance along the Atabapo and the Upper Orinoco. Bates‖ says the "Pupunha" grows wild nowhere on the Amazons, but has been cultivated from time immemorial by the Indians. Bunches of sterile or seedless fruit sometime occur at Ega and at Para. Seemann¶ says the "Pupunha" of the Amazon, the "Paripou" of Guiana, has in most instances fruit whose seed is abortive, the whole fruit being a farinaceous mass. Occasionally, however, fruits are found containing the perfect, stony seed, and they are then double the usual size. The tree is not found wild in the Amazon districts, but is invariably planted. This palm is propagated, says Williams,** both by suckers and from seeds.

The PEAR, *Pyrus communis*, L., is botanically a pome, a fleshy fruit with the calyx adherent, and forming along with the epicarp or skin, and the mesocarp or pulp, a thick cellular mass, which is eatable, while the endocarp is scaly or horny and forms separate cells enclosing the seeds. Its varieties are extremely numerous.

---

* An. and Pl., I, 404.

† Teoria Della Riproduzeoni, 69, quoted by Darwin.

‡ South. Cal. Hort., June, 1878, 292.

§ Travels, II, 336.

‖ A Nat. on the Amazons, 268.

¶ Popular Hist. of Palms, 208.

** Choice Stove and Greenhouse Plants, II, 212.

In 1842 more than seven hundred had been proved in the London Horticultural Society's Garden to be distinct. The Romans cultivated thirty-six varieties in the time of Pliny.* In Tuscany, under the Medici, in a manuscript list by Micheli of the fruits served up in the course of the year at the table of the Grand Duke Cosmo III, is an enumeration of two hundred and nine different sorts, and another manuscript of that time raises the number to two hundred and thirty-two, as Targioni-Tozzetti says.† Robert Manning, deservedly an authority on pears, informs me there is a variety without seeds, called Sans Pepins; that certain varieties, such as Vicar of Winkfield and Beurre Diel, have most of the seeds abortive; and that second crop pears are invariably seedless. M. Plumadore, Raleigh, N. C., writes me under date of February 17, 1880, "To my surprise the pears were seedless, having nothing but a small stem-like thread clean through the pear. On my expressing surprise, they said the reason was that they were the third crop that year. I cut several open to see if all were alike and found them all the same. These pears would average two and a half inches in diameter, and about three or three and a half inches in length, but a few were larger." This was in the autumn of 1877.

From a rather careful observation, I am disposed to believe that the more luscious or buttery the pear, the more frequent the abortive seeds, and certainly our improved varieties have fewer plump seeds than the fruit from seedlings.

The Persimmon. See Diospyros.

The Pineapple, *Ananassa sativa*, is a well-known instance of a seedless fruit. This is a multiple fruit, only the ovaries or pericarps never ripen any seeds, but all are blended with the floral envelopes, the bracts, and the axis of the stem they thickly cover, into one fleshy and juicy mass. The pineapple is indigenous in South America, and is now naturalized in many parts of the East Indies, in Surinam, etc.‡ Afzelius says § it grows wild in Sierra Leone, and are cultivated by the natives. It grows in vast abundance about Calcutta. Firminger‖ describes ten varieties, but does not

* M'Intosh, Book of the Garden.
† Jour. Lond. Hort. Soc., 1854, 159.
‡ M'Intosh, Book of the Garden.
§ Sabine., Hort. Trans., V, 461.
‖ Gard. in India, 174.

praise their flavor. A white kind which in the East Indies has run wild, is said by Unger* to still contain seeds in its fruit. Titford† says the pineapple grows wild in the woods of Jamacia. De Candolle ‡ says the pineapple sometimes has seeds, for Piso mentions positively a pineapple growing wild in Brazil bearing many seeds, and Humboldt found pineapples of delicious quality, growing wild on the Orinoco, and often the seeds were not abortive. J. H. White, of Florida,§ says "new varieties are produced from seed, but I have never seen a seed, and probably have never seen an apple that contained one. . . . A plant obtained from seed requires a long time to fruit — one writer says under favorable circumstances twelve years — and when it does fruit the chances are in favor of its being worthless." There are many varieties: in 1768, Taylor described five sorts; in 1737, Miller described five; in 1769, Speechly spoke of fourteen; in 1822, Nichol of ten; in 1831, George Lindley of thirty-seven; in 1834, Rogers of nine; Mr. Munro, a more recent writer, of fifty-two.‖ Mr. White¶ says one European catalogue gives the names of fifty, and it is said that fifty-two have been fruited at Chiswick, England. The fruit of all the varieties grown in Florida, he continues, is yellow; that of other sorts is said to be purple, scarlet, green, white, and black; it is mostly conical, sometimes globular, and differs in form, flavor, and consistency, weighing from two to fifteen pounds. In the wild state, Balfour** says the fruit is more or less acid, but when cultivated it becomes sweet and highly aromatic. Sir R. H. Schomburgk says, "We have met during our journeys in Guiana considerable extent of ground covered with pineapples; but in their wild state they are small, seldom larger than an apple, of a bright yellow; and though their smell is highly aromatic (surpassing in that regard the cultivated species) they are stringy, full of seeds, and rather acidulous in taste."††

The Pistacia. *Pistacia vera.* At Cabul, as J. Hanlan writes,‡‡ the pistacia yields a crop of fruit one year, followed always by a crop

---

* U. S. Pat. Of. Rept., 1859, 331.
† Hort. Bot. Am., 54.
‡ Geog. Bot., 926.
§ Cal. Hort., 1880, 42.
‖ M'Intosh, Book of the Garden.
¶ Cal. Hort., 1880, 42.
** Bot. 545.
†† Rawleigh's Dis. of Guiana., Hak. Soc. ed., 74, note.
‡‡ U. S. Pat. Of. Rept., 1861, 533.

of blighted fruit. The latter is like the former in external appearance, but is somewhat larger and quite destitute of kernel.

The Plum, *Prunus Americana*, Marsh, is subject in New Brunswick to an anomalous form, which renders it seedless and inedible.* I have myself observed this appearance in Maine, the fruit becoming swollen, pulpless, seedless, and tasteless. Sometimes the remnant of an embryo is to be observed. This form seems more commonly to be produced when the spring season is cold and rainy. It is caused either by a fungus or the sting of an insect. The result is that the plum in this condition can hardly be called a fruit.† Darwin‡ refers to a form of the plum, *P. domesticus*, in which "the kernel lies in a roomy cavity surrounded only by the pulp" and called the stoneless plum. The varieties of *P. domesticus* are very numerous, some being bright yellow, green, almost white, blue, purple, or red. Downing describes one hundred and eighty sorts, and a leading nursery catalogue § offers a selection of one hundred and three kinds.

The Pomegranate, *Punica granatum*, L. A peculiar baccate, many-celled fruit, having a tough rind formed by the calyx, enclosing two rows of carpels placed above each other. The seeds are immersed in pulp, and are attached irregularly to the parietes, base, and centre. This pulp is apparently formed by the placentas.‖ On account of the profusion of its seeds, the pomegranate was with the ancients a mystical fruit, typifying procreation, increase, and abundance. It is found wild in Asia Minor, in Armenia, and in Central Caucasus, and Barnes found whole woods of it in Mazanderan.¶ In the Himalayas, it grows wild, and the fruit, though small, is offered for sale.** Barnes, in his "Travels in Bokhara," remarks on the pomegranate seeding in Mazanderan, as a remarkable peculiarity.†† Hasselquist‡‡ observed a variety in Cyprus with barren flowers, called "Balanistica." In India, the best fruits, having sweet juice and very small seeds, come from

---

* Hooker's Journ. of Bot., III, 99.
† Dr. Harris in Hovey's Mag., VIII, 247; Dr. W. S. Farlow in New England Farmer.
‡ An. and Pl., I, 417.
§ Ellwanger & Barry, 1880.
‖ Balfour, Bot., 275, 262.
¶ De Candolle, Geog. Bot., 892.
** Royle, Illust. of the Bot. of the Him. Mts., 208.
†† Darwin, An. and Pl. II, 205.
‡‡ Voy. and Trav. in the Levant, 247.

Cabul.* Capt. Burton† describes three varieties which he met with in Arabia, one "Shamri" (Syrian), the best, a very sweet and superior fruit, almost stoneless, like those of Muscat, deliciously perfumed, and as large as an infant's head. The fruit is usually about as large as a full sized apple, having a hard rind of a yellowish color, and containing a pulp that is highly prized.‡ Sir A. Barnes mentions a "famous pomegranate without seeds, grown in gardens under the snowy hills near the Caubul River."§ "Seedless pomegranates from Djillabad" are enumerated among the fruits in the market of Cabul.‖ In 1860, cuttings of a seedless variety from Palestine, described as bearing fine fruit, much esteemed in Syria, were distributed from the U. S. Patent Office.¶

The STRAWBERRY, *Fragaria*, sp. In this fruit the enlarged and conical receptacle bearing the pistils on its surface, becomes the edible portion in fruit. Of this esteemed fruit the varieties are endless. William Saunders informs me that he once had a bed of pistillate strawberries which fruited, but bore no seed, and that there were no other plants near from which fecundation could have been effected. A mule plant, says Thomas Andrew Knight,** from the Hautbois and Alpine strawberry, "blossoms very freely, and its blossoms set well; but the growth of the fruit subsequently remains very nearly stationary during the whole period in which the Hautbois strawberry grows and ripens, after which it swells and acquires maturity. It is then rich and high flavored, but of less size than the Hautbois, and without seeds."

In the above list, which we have extended somewhat to include the whole number of seedless fruits that we have collected, and wherein we have given such other information as will tend to show other conditions than the one of *antagonism* between the qualities of seedlessness and excellence of taste, we find either stated or inferred an improvement in quality accompanying seedlessness, or the lessening of seed-production, in the apple, the banana, the bread-fruit, the cherry, the cucumber, the date, the grape, the mulberry, the orange, the peach palm, the pear, the persimmon, the pine-

* Dutt., Hindoo Mat. Med., 166.
† Pilgrimage to El Medina and Meccah, I, 388.
‡ J. Smith, Dom. Bot., 368.
§ Firminger, Gard. in India, 260.
‖ J. Harlan, U. S. Pat. Of. Rept., 1861, 530.
¶ U. S. Pat. Of. Rept., 1860, 34.
** Phys. and Hort. Papers, 276.

apple, and the pomegranate. The exceptions appear to be the barberry, a fruit in but little esteem while raw; the beech nut, where seedlessness destroys its usefulness, as the seed is the part which is edible; the chestnut, wherein abortion destroys likewise the edible matter; the fig, concerning which as a seedless fruit we have collected few particulars; the guava, of which we have collected but little information; the medlar, of which we have found no reference to quality; the opuntia, a wild plant but little known; and the strawberry, of which we may say that it is probable that improvement in quality is accompanied by a proportionate lessening of the seeds. The pistacia, and plum, when seedless, appear to possess no quality whatsoever.

These fruits, using this term in a cultural sense, and excluding the edible seeds, are neither an essential to the plant nor to the seed. Like other unessential, yet generally present features, as the form of the floral envelopes, the coloring of the corolla, and the number of the leaves, the fruit is subject to a wide series of variations in size, color, and shape. It seems formed from the part of a plant peculiarly subject to modification, and apt to record the influence of external impressions; that portion of the plant which is of limited duration, and which must speedily fill its part. It is accessory to the seed only, and is concerned more with the province of the protection and distribution, than with the development. The apparent exceptions are the grape, guava, and the pomegranate, whose pulp seems formed of the placentas. The edible portion of most of these fruits consist of the pericarp, which is formed of three layers; the external, the epicarp, corresponding to the lower epidermis of the leaf and forming the skin to certain fruits; the middle, the mesocarp, representing the parenchyma of the leaf, and forming the pulpy portion of the apple, cherry, date, pear, etc.; and the internal, or endocarp, equivalent to the upper epidermis of the leaf, or the epithelium of the ovary,* and originating the edible portion of the orange and the banana. Yet if morphologically allied to the leaf, it has this important distinction,—the true leaf works for the plant; the fruit coverings of the seed work for themselves primarily, using the produce of the labor of the plant. Without the fruit the plant has a better growth as a plant, as is to be observed in numerous instances. Without the

* Balfour, Bot., 262.

great development of the fruit (Cultural fruit, I mean) the seeds are better nourished, as our examples of seedless fruits show, and also the fact that the wild species which have, so to speak, to look out for their own perpetuation, bear inferior fruits in size and flavor to those improved varieties we have released from the care of self-preservation.

Upon this view of the fruit, we can understand why we can so readily influence the character and the amount of the pulp of the fruit, as apart from the seed. The leaf builds up the plant; the fruit is royal; it uses the supplies furnished by the root and the leaf, and builds up itself. The root and the leaf are providers, the fruit is the regal consumer that adorns and expends through a more or less educated civilization. We can hence influence the fruit through an action on the providers, or we can increase the ambition of the user, or we can exercise our art upon root, leaf, and fruit. The first idea implies the furnishing of abundant fertility to the soil, and favoring culture and climatic conditions: the second idea implies the exercise of the art of selection: the third conveys the idea of intelligent domestication.

The rapid growing and sensitive condition of the parts concerned in the formation of the fruit, render it peculiarly subject to the sexual condition of the plant. An influence of the fertilization of the pistil, which is plainly recognized and quickly noted in the pistil, is not as readily apprehended upon the plant; yet, in some instances, and possibly, in very many, the influence of the pollen is noticed in a change of growth of the plant, as is also the influence of castration or the removal of the seed elements from influencing. This influence, which I have never seen noticed by authors, I am certain I have seen, but the results are too obscure to admit of detailed description, although in some cases plainly evident. They are best seen, and always seen, so far as I have examined, on rapid growing plants. As the pollination then has a strong influence, not only, as is well known, upon the formation of the seed, but also upon the seed coverings, and, as I have hinted, upon the plant considered as a whole, it is well to consider rather in detail, its influence upon the fruit.

Pollination is not fertilization, as the latter process consists of the union of the pollen material with the ovule; the former implies only the reception of the pollen by the stigma of the angiospermous plants. Pollination is not always productive of fertility, nor, on the

other hand, is sterility dependent upon the withholding of pollination or fertilization. Pollination acts upon the seed envelopes; fertilization may act upon the seed-envelopes, but does act upon the ovule. Fertilization is hence a sequence to pollination. Through the changes induced by the process of conscious, or unconscious domestication, we seem able to cause the pollination factor of the anther-product, to act in excess over the fertilizing factor, and hence produce results favorable to edible matter, and less favorable for the seed than would occur under wild conditions.

1. Pollination is not always productive of fertility. Gärtner* has shown by gradually increasing the number of pollen-grains until he succeeded in fertilizing a *Malva*, that many grains are expended in the development, or, as he expresses it, in the satiation of the pistil and ovarium. Again, when one plant is fertilized by a widely distinct species, it often happens that the ovarium is fully and quickly developed without any seeds being formed, or the coats of the seeds are developed without an embryo being produced within. Dr. Hildebrand† has shown that with several Orchidaceæ, the action of the plant's own pollen is necessary for the development of the ovarium, and that this development takes place not only long before the pollen tubes have reached the ovules, but even before the placentæ and ovules have been formed. Darwin‡ sums up by stating "we may admit that in most cases the swelling of the ovarium, . . . is at least aided, if not wholly caused, by the direct action of the pollen, independently of the intervention of the fertilized germ."

2. The access of pollen is not always necessary for fertility. Quatrefages§ says it is now unquestionable that certain plants can produce fertile seeds, although the flower has not been submitted to the action of pollen. Thus Spallanzani, Bernhardi, and Ch. Naudin affirm that female hemp can fructify without the participation of the male. Fresenius‖ says *Datisca cannabina*, female, fructifies very well without the concurrence of the male. M.

---

* Beiträge zur Kenntniss du Befruchtung, 1844, 347–351, quoted by Darwin, An. and Pl. I, 483.

† Botanische Zeitung, No. 44, et. seq., Oct. 30, 1863; and 1865, s. 249, quoted by Darwin, ib.

‡ An. and Pl., I, 484.

§ Metamorphoses of Man, etc., Lond., 1864, 271.

‖ Linnæa, 1839.

Tenore* says the same for *Pistacia Narbonensis*, and Ch. Naudin for *Bryonia dioica*.† The same fact is also claimed to have been observed in *Cœlebogyne ilicifolia*, and a species of *Mercurialis*.‡

3. Nor is fertilization always necessary for fruiting. Thus Prof. Treviranus§ says "the circumstance which occurs in some plants (I will adduce only the banana and pineapple among Monocotyledons, and the hop and mulberry among Dicotyledons) that a perfect development of fruit, though with barren seeds, will take place without the process of fertilization, while in most others, under similar circumstances, no fruit is produced." Darwin‖ says "Again, it is well known that with many plants the ovarium may be fully developed, though pollen be wholly excluded, and . . . Mr. Smith . . . . . (as I hear through Dr. Hooker) observed the singular fact with an orchid, the *Bonatea speciosa*, the development of the ovarium could be effected by mechanical irritation of the stigma." Other illustrations may be selected from the statements given in our list of seedless fruits.

We are now prepared to discuss the causes productive of seedless fruits. We first note that (with the exception of the barberry, beech, chestnut, and opuntia) all of our list includes cultivated plants; second, that the majority have been cultivated from a remote antiquity; third, that all but one (and perhaps that) have furnished many varieties; fourth, that seedlessness has been an observed and desirable feature for most of them; fifth, that all can be readily propagated in other ways than from seed; sixth, that in no one instance is seedlessness always present; seventh, that improvement in quality is too often stated or inferred, to be considered accidental; eighth, that prolificacy in fruit is not incompatible with sterility in seed; ninth, that there is a tendency to decrease in size with seedlessness in some cases, and increase in others, and that probably those fruits whose edible portions are formed of placentas come in the first class, and the multiple fruits, and those whose pulp is the mesocarp in the second class; tenth, that the species are about equally divided between northern and southern climates.

We are next to note that neither pollination nor fertilization is

---

* Ann. des. Sc. Nat., 4th ser., I, 328.

† Hooker's Journ. of Bot., IX., 53.

‡ A. A. Black, Treas. of Bot., I, 309.

§ Jour. Lond. Hort. Soc., 1854, 112.

‖ An. and Pl. I, 483.

always essential to the formation of fruit; that the pollen may influence a development with sterility: that there is an antagonism of growth apparent between foliage and fruitfulness, and between pulp increase and seed maturation, and that cultivated plants are invariably and rigidly subject to the law of selection.

We are also to note that man usually works, even if unconsciously, upon the average, in the direction of his interests, or his satisfaction, and when a diminution in the size of seeds, and improved availability for use, once acquires recognition, there is a beginning of conscious selection.

It has often occurred to me that the influence of high culture upon the amelioration of fruits has been misunderstood. The effect of manuring is to cause increased growth of foliage and shoots, and it is often detrimental to the fruiting, as I have observed in my study upon the maize plant. The influence of cultivation is to check the growth of foliage and increase the fruiting tendencies of the maize plant upon over-rich soil. The effect of pruning, judiciously performed, is to improve the quality of fruit. In order, then, to ameliorate a wild species of fruit, one effort should be to stimulate the growth of the plant to the utmost, by furnishing favorable conditions of soil and fertility, and then to check rampant growth through the process of cultivation, and the art of pruning. In this way, for fruits formed of the mesocarp, we should expect to augment the tendency to increase of pulp, and a variation once obtained might be hoped to be perpetuated and increased through the process of seeding and continuous selection. As the pulp is improved, there is a diminution in the relative size of the seed for the species, and the seed, as we have indicated in our list, has a tendency to become abortive.

It is quite probable that the continued amelioration of the pulp, which must occur sometimes amongst the vicissitudes of extended and long continued cultivation, is one important factor in the accounting for the seedlessness of some fruits, whether as a direct or more remote cause; especially of those fruits formed of the carpels.

In the multiple fruits, such as the breadfruit and the pineapple, we can understand how cultivation could produce a variation which would be recognized even by the savage, as desirable. Any cause which would diminish the energy of the pollen so that it would imperfectly fertilize, and be expended upon the ovaries without affect-

ing the ovule, and we have many instances of such a condition happening in cultivated plants (the apple of St. Valery, for one instance, and generally observed in hybridizing), and the softening of the core of these fruits, would probably be observed, for the general effect of seed-bearing is to harden the stalk, as for instance, the soft and flimsy cob of the unfertilized grain ear, and the hard, woody cob of the developed grain ear of the maize plant.

Hybridizing may be assigned as another cause whereby, although mules are oftener produced, an occasional seed may be found, and this seed, growing, might produce a seedless plant, which could be perpetuated and multiplied by offshoots, cuttings or grafts. Some of the statements given in our list would bear out this hypothesis.

Development without fecundation may also be assigned as an immediate cause, and this explanation derives additional force from the fact that the male element is apparently much oftener affected by changed conditions, at least in a visible manner, than the female element or ovule.* There would hence, under conditions of the cultivation of the fruit species named, be a tendency towards pollination in excess over fertilization, and selection would here come into play to intensify the differences once obtained, originating from this source. It is easy to believe, through the evidence given by the results of hybridism, that pollen may become unfitted to fertilize, and yet retain an influence upon the seed envelopes, the pericarp, and its modifications. This indeed, we believe to offer a sufficient explanation of the occurrence of many of our seedless fruits.

The influence of irritation in producing a development of the ovarium has been adverted to in the case of the orchid, *Bonatea speciosa*. Other instances can be given where the puncture of an insect produces the structure called galls. Thus, in Framingham, the common blueberry, *Vaccinium Pennsylvanicum*, Lam., occasionally bears a white fruit an inch or less in diameter, resembling a bladder with a fleshy rind, and tasteless; and the same form, but of irregular shape, is to be found in the place of the flowers and leaves, but I have never found any trace of insects within. In Zante, the apples or tumors of the sage, the effect of puncture of a species of cynips, are said by Sibthorp to be made into a conserve with honey. Galls are found on leaves, flowers, fruits, buds, and young bark, says Thomé, and they afford a striking illustra-

* Darwin, An. and Pl., II, 325.

tion of the influence of irritation upon structure. Placing a drop of oil in the eye of the fig, says Downing, causes the fruit to ripen much more certainly, and to swell to a larger size, and although oil can scarcely be considered an irritant substance, yet it seems to act such a part in this case. Whether this has any influence or not on the question of seedlessness, is worthy of future examination, but as yet, so far as we know, it must be considered only as a suggestion. As cucumbers are frequently seedless under glass culture, and as I have never seen them seedless under open-air culture, it is possible that exposure to the sun in the glass house has something to do with the development of the ovarium.

With this presentation we bring our paper to a close, not claiming as yet to have solved the problem, but desiring to call attention to the horticultural importance of this subject. It seems probable that in the future the most rapid horticultural advance is to be sought through the selection of seedlings from fruit containing the fewest and smallest seed of their kind, as unconsciously seems already to have been done in the improvement of the grape. Since writing this paper, I have collected a number of facts which lend publicity to this view.

NOTE.

The following quotations of additional seedless fruits were obtained too late for insertion in their proper places.

LUCUMA *bifera*, Mol , of Chili, bears fruit twice a year. The one set, early in summer, has no kernels; the other set in autumn has two kernels.—*Molina, Hist. of Chili, I*, 129.

The OTAHEITE APPLE, *Spondias dulcis*, which contains a hard capsule, commonly has no seeds in the loculaments or divisions.—*Foster's Obs.*, 179. Firminger was told that the seeds never germinate, but the varieties are propagated by grafting.

LEMON CITRON.—The variety known as "Poncire" is always seedless. The Chinese Citron, the "Cedrat," of Florence, is sterile, or nearly so. The Large Orange Citron never contains seed.—*Gallesio, Treatise on the Citrus Family.*

The LEMON.—In South Africa, Thunberg (*Travels, II*, 141) met with a lemon which contained another within it, furnished with a

red rind. Neither of these two lemons had any seed. The Double Flowered lemon, says Gallesio, has no seeds. Other lemons sometimes contain no seeds. The Lime of Naples, the smallest of European lemons, is round, smooth, and very thin skinned, the skin odorous, the pulp abundant, its juice acid and agreeable because of its delicacy and aroma. This is one of the most highly esteemed lemons, adds Gallesio, and has no seeds.

Pumpkin.—When the *Cucurbita maxima*, *C. pepo*, and *C. moschata* were crossed, they yielded no seed, or only sterile seed.—*Darwin*, *An. and Pl.*, *I*, 430.

Pirus lanuginosa, DC., or Woolly-Leaved Service tree.—The flowers and fruit resemble those of the mountain ash, but are smaller; the flowers are frequently abortive, and the fruit, when it is produced, is generally without seeds.—*Loudon*, *Arb. II*, 924.

Tomato.—There is a seedless variety, fruits almost rose red, smooth and handsome, with few seeds. Very similar to, if not identical with, the "Perfected."—*Burr's Gard. Veg.*, 248.

DATE OF FLOWERING OF TREES AND SHRUBS, IN EASTERN MASSACHUSETTS, 1880.

BY JOHN ROBINSON, PROFESSOR OF BOTANY AND VEGETABLE PHYSIOLOGY TO THE SOCIETY, SALEM, MASS.

The following record of the time of flowering and fruiting of hardy, native and introduced trees and shrubs in the vicinity of Boston, Massachusetts, has been made chiefly at the Arnold Arboretum, West Roxbury; the Botanic Garden, Cambridge, and from trees and shrubs growing naturally in Essex County, during the year 1880. Unless otherwise mentioned the time of flowering is intended.

A few warm days in January sufficed to develop the flowers on the Red and White Maples; and the catkins on some of the Alders, Willows, and Poplars were quite conspicuous; but the season of

flowers can hardly be said to have commenced before the first of April:

March 20, Corylus Avellana.
Corylus Americana.
Alnus incana.
Alnus glutinosa.
April 4, Populus alba.
5, Populus tremuloides.
Acer rubrum.
Salix discolor.
6, Epigæa repens (for sale in Boston streets).
13, Salix viminalis.
14, Ulmus Americana.
Salix Caprea.
Salix acuminata.
Salix stipularis.
Salix Forbesiana.
Salix ferruginea.
Rhododendron chrysanthum.
Rhododendron Dahuricum.
Corylus rostrata.
Cornus mascula.
Shepherdia argentea.
Daphne Mezereum.
Erica carnea.
15, Salix humilis.
Ulmus campestris.
16, Andromeda Japonica.
Forsythia Fortunei.
Forsythia suspensa.
19, Larix Europæa.
Larix leptolepis.
21, Laurus Benzoin.
Andromeda floribunda.
Ulmus montana.
Salix sericea.
25, Populus grandidentata.
Populus balsamea, *var.* candicans.
Populus dilatata (Lombardy Poplar).

April 25, Myrica Gale.
Cassandra calyculata.
Dirca palustris.
Salix livida, *var.* occidentalis.
Salix tristis.
27, Corema Conradii (at Plymouth, Mass).
Magnolia conspicua.
Larix Americana.
Acer platanoides.
28, Magnolia Soulangeana.
May 1, Prunus domestica.
Vinca minor.
Chamæcyparis sphæroidea.
Prunus Armeniaca.
Ribes rubrum.
Buxus sempervirens.
3, Prunus Persica.
Berberis repens.
Lonicera ciliata.
Erica carnea.
Ribes cereum.
Ribes aureum.
Spiræa Thunbergii.
Negundo aceroides.
Betula lutea.
Acer saccharinum.
Salix tenuifolia.
Salix cordata.
Salix triandra.
Salix purpurea.
Salix Andersoniana.
Abies balsamea.
Thuja occidentalis.
4, Ostrya Virginica.
Berberis Aquifolium.
Amelanchier Canadensis.
Amelanchier Canadensis, *var.* oblongifolia.
Salix alba.
Salix fragilis.
Magnolia Lenné.

May 4, Fraxinus excelsior.
6, Picea alba.
Vaccinium Pennsylvanicum.
Juniperus Virginiana.
Fraxinus Americana.
7, Pirus Malus, *var.* floribunda.
8, Fraxinus pubescens.
9, Daphne Cneorum.
Betula lenta.
Betula alba, *var.* populifolia.
Prunus Pennsylvanica.
Vaccinium corymbosum.
Arctostaphylos Uva-Ursi.
10, Salix Babylonica.
Spiræa prunifolia.
Spiræa oblongifolia.
Cercis Japonica.
Berberis Thunbergii.
Vaccinium corymbosum (tall form).
Sassafras officinale.
Celtis occidentalis.
Rhodotypos kerrioides.
Sambucus pubens.
Sambucus racemosa.
Celastrus Orixa.
Kerria Japonica.
Acer glabrum.
Acer polymorphum.
Rhus aromatica.
Xanthoxylum Americanum.
Cotoneaster vulgaris.
Amelanchier vulgaris.
Lonicera cærulea.
Ribes prostratum.
Prunus spinosa.
Pirus Japonica.
Betula nigra.
Betula papyracea.
11, Lonicera Tartarica.
Cornus florida (bracts opening).

May 11, Pirus baccata.
Pirus Malus.
Picea excelsa.
Rhododendron Rhodora (R. Canadensis).
Thuja (Biota) orientalis.
Fagus ferruginea.
Acer Pennsylvanicum.
Rhododendron (Cunningham's White).
Taxus baccata, *var.* Canadensis.
Syringa vulgaris.
Comptonia asplenifolia.
Ptelea trifoliata.
12, Juglans Sieboldii.
Cratægus coccinea.
Staphylea Bumalda.
Pirus arbutifolia.
Schizandra Sinensis.
Ribes floridum.
Prunus maritima.
Lonicera Ruprechtiana.
Andromeda polifolia.
Caragana microphylla.
Quercus dentata.
Pirus spectabilis.
Cornus Sibirica.
Spiræa lævigata.
13, Æsculus flava.
Æsculus Hippocastanum.
Chamæcyparis (Retinospora) pisifera.
Prunus Cerasus (Double).
Halesia tetraptera.
Cratægus tomentosa.
Quercus Robur.
Quercus rubra.
Quercus coccinea.
Lycium vulgare.
Juglans regia.
14, Rubus deliciosus.
15, Quercus tinctoria.
Picea nigra.

May 15, Pirus aucuparia.
16, Salix nigra.
Salix lucida.
Ribes oxyacanthoides.
Quercus ilicifolia.
Quercus bicolor.
Quercus alba.
Platanus occidentalis.
Vaccinium vacillans.
Wistaria Sinensis.
17, Carya alba.
Carya tomentosa.
Pinus pungens.
Æsculus flava, *var.* purpurea.
Lonicera Mariana.
Lonicera involucrata.
Acer cissifolium.
Xanthorhiza apiifolia.
Æsculus Hippocastanum (Double).
Acer spicatum.
Magnolia acuminata.
Acer circinatum.
Acer Pseudo-Platanus.
Pirus (Cydonia) vulgaris.
Salisburia adiantifolia.
Spiræa obovata *var.* hypericifolia.
19, Cryptomeria Japonica.
Pinus sylvestris.
Cratægus subvillosa.
Exorchorda grandiflora.
Leiophyllum buxifolium.
Cornus Sibirica.
Caragana arborescens.
Chamæcyparis (Retinospora) obtusa.
Rhamnus lanceolata.
Rosa acicularis.
Pterocarya fraxinifolia.
Morus alba.
Pinus inops.
Pinus Banksiana.

May 19, Acer Tartaricum, *var.* Ginnala.
Carya amara.
Ribes nigrum.
Ribes lacustre.
Ribes Grossularia.
Ribes rotundifolium.
Fothergilla alnifolia.
Vaccinium staminium.
20, Pæonia Moutan.
Prunus Virginiana.
Cornus florida (true flowers).
Berberis vulgaris.
21, Rhododendron (Azalea) nudiflorum.
Rhamnus cathartica.
24, Euonymus Americanus, *var.* obovatus.
Euonymus pulchellus.
Lonicera diversifolia.
Lonicera Maximowiczii.
Berberis Sibirica.
Berberis Canadensis.
Berberis Sinensis.
Berberis petiolaris.
Berberis dulcis.
Berberis vulgaris, *var.* purpurea.
Berberis emarginata.
Ptelea angustifolia.
Spiræa alba.
Spiræa betulæfolia.
Spiræa Fortunei, *var.* Van-Houttei.
Spiræa Amurensis.
Juglans cinerea.
Cotoneaster microphylla.
Morus rubra.
Morus nigra.
Syringa Persica.
Rhamnus infectoria.
Acer Tartaricum.
Viburnum Opulus.
Menziesia globularis.
Rosa alpina.

May 24, Rosa blanda.
Pinus rigida.
Gaylussacia resinosa.
Neviusia Alabamensis.
Cytisus purpureus.
Spiræa Reevesiana.
Smilax rotundifolia.
Calycanthus floridus.
25, Spiræa trilobata.
Viburnum plicatum.
Viburnum Lentago.
Cratægus Oxyacantha (Double and Single White and Pink).
Rosa rugosa.
Viburnum Opulus, *var.* (Snowball).
Rhododendron (Azalea) mollis.
Rhododendron (Azalea) Ponticum.
Rhododendron (Azalea) calendulaceum.
Pirus hybrida.
Deutzia gracilis.
Pinus Pumilio.
Pinus Laricio, *var.* Austriaca (Austrian Pine).
Pinus resinosa.
Laburnum vulgare.
Myrica cerifera.
27, Robinia Pseudacacia.
Chionanthus Virginica.
Diervilla (Weigela) rosea.
Ledum latifolium
Leucothoë Catesbæi.
Magnolia Fraseri.
Magnolia Umbrella.
Rosa pomifera.
Gaylussacia ursina.
Tamarix Gallica.
Lonicera caprifolia.
Cornus alternifolia.
Calycanthus glaucus.
Calycanthus lævigatus.
Rhododendron Catawbiense.

May 27, Berberis Fendleri.
28, Rubus villosus.
Rubus hispidus.
Pinus parviflora.
31, Rhus Toxicodendron.
June 2, Magnolia glauca.
Pinus Strobus.
Philadelphus hirsutus.
Viburnum acerifolium.
Colutea arborescens.
Nyssa multiflora.
Celastrus scandens.
Amorpha frutescens.
Philadelphus coronarius.
Cratægus pyracantha.
Gleditschia triacanthos.
Rhus cotinus.
Vitis Labrusca.
Rosa (garden varieties).
3, Philadelphus coronarius *var.* nanus.
Philadelphus grandiflorus.
Andromeda Mariana.
Robinia viscosa.
Buckleya distichophylla.
Rosa rubifolia.
Rosa spinosissima.
Rosa multiflora.
Aristolochia Sipho.
Cornus circinata.
Jamesia Americana.
Lonicera flava.
5, Hudsonia tomentosa.
Rosa cinnamomea.
Rosa pimpinifolia.
Rubus strigosus.
Pinus excelsa.
Lonicera sempervirens.
Lonicera Japonica.
Diervilla (Weigela, White and Dark Red varieties).
Syringa Josikæa.

June 5, Neillia opulifolia (Spiræa of gardens).
Vitis æstivalis.
Cornus paniculata.
Spiræa callosa.
Ptelea trifoliata.
Gymnocladus Canadensis.
Phellodendron Amurense.
Clematis fusca.
Spiræa salicifolia.
Potentilla fruticosa.
Celastrus paniculata.
Kalmia latifolia.
Ilex lævigata.
Cytisus nigricans.
10, Sambucus Canadensis.
Liriodendron Tulipifera.
Rubus occidentalis.
Tamarix Sinensis (first flowers).
14, Magnolia glauca (at Gloucester).
Styrax Japonica.
Ligustrum vulgare.
16, Wistaria frutescens.
Viburnum dentatum.
Genista tinctoria.
Rosa lucida.
17, Rubus odoratus.
Rubus Canadensis.
18, Rhododendron punctatum.
Andromeda speciosa.
Philadelphus Gordonianus.
Philadelphus inodorus, *var.* grandiflorus.
Rhododendron (Azalea) viscosum.
Tilia Europæa.
Halomodendron argenteum.
Calophaca Wolgarica.
Solanum Dulcamara.
Kalmia angustifolia.
19, Rhus venenata.
Cornus circinata.
Cornus paniculata.

June 19, Mitchella repens.
Linnæa borealis.
Rhus typhina.
23, Euonymus Europæus.
Gaylussacia frondosa.
Ailanthus glandulosus.
26, Ceanothus Americanus.
Cornus sericea.
Andromeda ligustrina.
Amelanchier Canadensis (fruit).
Vaccinium Pennsylvanicum (fruit).
Vaccinium corymbosum (small form, fruit).
Castanea vulgaris, *var.* Americana.
28, Rhododendron maximum.
Rosa rubiginosa.
Rosa lucida.
July 2, Spiræa Douglasii.
Ligustrum lucidum, *var.* ovalifolium.
Genista Sibirica.
Rosa setigera.
Ligustrum Japonicum.
Morus alba (fruit).
Morus nigra (fruit in market).
Catalpa Kæmpferi.
3, Koelreuteria paniculata.
Tilia Americana.
Hypericum Kalmianum.
4, Rosa Carolina.
Rubus occidentalis (fruit).
Catalpa bignonioides.
Chimaphila umbellata.
8, Ribes rubrum (fruit in market).
Hydrangea radiata.
Hydrangea arborescens.
Buddlea curvifolia.
Spiræa sorbifolia.
Spiræa Nobleana.
Spiræa Fortunei.
Castanea pumila.
Cephalanthus occidentalis.

July 12, Æsculus parviflora.
Erica tetralix.
Amorpha canescens.
Symphoricarpus racemosus.
Clematis Flammula.
20, Ampelopsis quinquefolia.
Rhus glabra.
Menziesia polifolia.
Menziesia polifolia *var.* alba.
28, Clematis campaniflora.
Clematis graveolens.
29, Clethra acuminata.
Lespedeza bicolor.
Aralia Japonica.
30, Rhus copallina.
Clematis Virginiana.
Ampelopsis tricuspidata (Veitchii of gardens).
August 3, Clematis paniculata.
Clematis ligusticifolia.
Clematis purpurea.
Clematis Pitcheri.
Euonymus pulchellus (fruit).
Ribes floridum (fruit).
Ribes nigrum (fruit).
Ribes Cynosbati (fruit).
Rhus semialata (R. Osbeckii).
Calluna vulgaris.
Clethra alnifolia.
9, Hibiscus Syriacus.
Tamarix Chinensis (full flower).
20, Prunus Persica (fruit).
Euonymus Sieboldianus.
Sept. 4, Berberis Fortunei.
Prunus maritima (fruit).
7, Quercus rubra (fruit).
Æsculus flava *var.* purpurea (fruit).
10, Æsculus Hippocastanum (fruit).
20, Quercus (fruit of all species falling).
Tilia Europæa (fruit falling).
Aralia Japonica (fruit).

Sept. 20, Æsculus parviflora (fruit).
23 Hamamelis Virginiana (fruit and flowers).
Gaultheria procumbens (fruit).
Mitchella repens (fruit).
Viburnum acerifolium (fruit).
Sophora Japonica.
Quercus Cerris (fruit).
Lespedeza (Campylotrypus) Sinensis.
Artemisia filifolia.
Celtis occidentalis (fruit).
Cornus florida (fruit).
25, Æsculus glabra (fruit).
Castanea vulgaris *var.* Americana (fruit).
30, Erica vagans.
Berberis vulgaris (fruit).
Berberis dulcis (fruit).
Berberis Sinensis (fruit).
Fraxinus Americana (fruit falling).
Magnolia acuminata (fruit falling).
Oct. 2, Berberis Canadensis (fruit).
Berberis emarginata (fruit).

CORRESPONDENCE.

FEDERAL POINT, FLORIDA,
November 4, 1879.

ROBERT MANNING,

Secretary Massachusetts Horticultural Society:

Dear Sir,—I have received and read with pleasure, Part I of the TRANSACTIONS of the Massachusetts Horticultural Society for 1879. On pages 23 and 32, allusion is made to a newspaper report about the deterioration of sweet oranges in Florida when grafted on the wild stock. The statement was probably circulated by persons who had ungrafted trees for sale, raised from sweet seeds. The most intelligent and progressive cultivators here constantly practice budding the choicest sorts on the wild stock with no fears of deterioration. In the orange districts of Europe, where this method of propagation has prevailed for many generations, the general testimony is that the oldest budded trees produce the sweetest and best fruit, although it is smaller in size than that of younger trees. The poor quality of the fruit upon old grafted trees, mentioned by Mr. Merriam, must have been owing to neglect or disease. If a neglected or scrubby tree be taken in hand and given generous culture, the fruit will immediately become so vastly improved in size and flavor that it could not be recognized as the same variety. Neither is the Indian River orange so peculiar and distinct as Mr. Merriam imagines. Its fine quality is partially owing to the congeniality of the soil and climate of that section. When Dr. Turnbull brought over his Minorcan colony in the last century, he also introduced a superior orange, which has since been largely propagated along the coast under the name of the Turnbull orange; but very many of the Indian River trees were budded from groves on the St. John's, and their product ranks with the best. Budding on the wild orange *does* offer the temptation of earlier returns, but not of greater hardiness, as Mr. Merriam states. The sour budded with the sweet is more likely to be injured during severe weather than an ungrafted sweet seedling, and some experienced growers profess to believe

that the sweet tree will endure a very little lower temperature than the sour. In Florida there are in circulation many erroneous and absurd opinions respecting orange culture as well as other things, and it is singular how many of these absurdities are accepted by visitors here, and detailed elsewhere as gospel truths. The sour orange grows faster while young than the sweet, and comes into bearing two or three years sooner, but the sweet finally overtakes it and makes the largest tree. Which of the two is the longest lived, it is impossible to say, as no one ever saw an orange tree die of old age in Florida.

Mr. Merriam also alludes, on page 96, to a rust on the orange which he considers of fungoid origin. Although he has never seen it elsewhere than in Florida, the New York dealers complain of receiving fruit from the West Indies and other places, similarly affected. The cause and nature of this rust has not as yet been satisfactorily determined. During the present season it has been made an especial object of study by microscopists, and, from the presence of minute insects, has been conjectured to result from the overflowing and hardening of the oil from cells ruptured by these insects. On the other hand it may be a deposit like honey-dew, more or less abundant as the influence of seasons, cultivation, or atmospheric conditions favors its precipitation.

As touching the influence of graft upon stock, I may observe that wherever I have worked stocks of the sour orange with the lemon, which latter is of more rapid growth, the stocks increased in thickness very much faster than when grafted with the sweet orange. I have also worked the sweet orange upon the lime and lemon, but cannot yet state whether the oranges produced differ materially from those on their own stocks.

A dozen years ago I procured grafts of the Lombard, Washington, and Imperial Gage plums, which were set on our common Chicasaw species. The union was perfect, and the trees grew vigorously, but in our climate became evergreens and bore but little fruit. This fruit resembled the gage plums in external appearance, but in texture and flavor inclined towards the Chickasaw. However, being unproductive, I was not satisfied, and so dug them up and threw them away.

Yours truly,

EDMUND H. HART.

W. S. Hart, of New Smyrna, Florida, writes: "I was much interested in the discussion on the Influence of the Stock upon the Graft. In it I see some wrong statements as to our oranges deteriorating when the sweet is budded on the sour stock. That is a great mistake, as I will try to prove to you at some future day."

The following letter from G. F. B. Leighton, a Corresponding Member of the Society, was suggested by the remarks on page 94 of the TRANSACTIONS for 1879, Part I, in regard to the duration of apple orchards:

NORFOLK, VA., SEPTEMBER 30th, 1879.

To the Massachusetts Horticultural Society:

Gentlemen, — A description of an apple orchard planted in Alfred, York County, Maine, in 1804, may be of interest to some of your orchardists. This orchard was planted by Daniel Holmes, a native of Kingston, Mass., in 1804, and consisted of about three hundred trees, all grafted fruit, the Baldwin, Roxbury Russet, and Rhode Island Greening taking the lead, with some Golden Russet, Pearmain Russet, Crawford, and five or six other kinds, the names of which have escaped my memory, but all choice varieties.

This orchard is upon a rocky hillside, facing the east, and in 1825 was regarded as the finest orchard in Maine. Last year there were remaining about two hundred and fifteen trees, which yielded two hundred bushels of apples.

Most respectfully,

G. F. B. LEIGHTON.

CONTENTS.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1880.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY.
1881.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 3, 1880.

A duly notified stated meeting was holden at 11 o'clock, Vice-President John B. Moore in the chair.

C. H. B. Breck, from the Executive Committee, reported a recommendation that the Society appropriate $250 for the expenses of the Committee of Arrangements. The appropriation was unanimously voted.

Miss SALOME H. SNOW, of Brunswick, Maine,
having been recommended by the Executive Committee, was, on ballot, duly elected a Life Member of the Society.

Adjourned to Saturday, May 1.

BUSINESS MEETING.

SATURDAY, May 1, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

Edwin A. Hall announced the decease of Jesse Haley, of Cambridgeport, and moved the appointment of a committee to

prepare memorial resolutions. The motion was carried, and the chair appointed as that Committee, Charles M. Hovey, Benjamin G. Smith, and Edwin A. Hall.

Adjourned to Saturday, June 5.

BUSINESS MEETING.

SATURDAY, June 5, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

The following vote, offered by C. O. WHITMORE, was unanimously passed:

Voted, That the Finance Committee, on behalf of the Society, request our President, the Hon. Francis B. Hayes, to sit for his portrait to be placed in the Society's rooms, and that the Treasurer is hereby authorized to pay for the same on approval of said Committee.

Benjamin G. Smith, from the Committee appointed at the last meeting to prepare resolutions in memory of Jesse Haley, presented the following, which were unanimously passed:

Whereas, The Society has learned of the decease of one of its members, Jesse Haley, of Cambridgeport, who died March 16, 1880, at the ripe age of seventy-three years and nine months;

Resolved, That the Massachusetts Horticultural Society would reverently recognize the wise though mysterious providence by which it has been so recently deprived of one of its active members, who always manifested much interest in the exhibitions of the Society, by contributing choice varieties of pears, to the production of which the latter part of his life was devoted, and whose orchards now show his great care in the cultivation of that fruit.

In his death, not only this Society, but the community, in many of its interests, has lost a most estimable friend, and a highly respected citizen.

Resolved, That the members of this Society tender to his family their sympathy in this their sad bereavement.

Resolved, That this notice of the death of Mr. Haley, be placed upon the records of the Society, and that a copy be sent to his family.

Adjourned to Saturday, June 12, at 12 o'clock.

BUSINESS MEETING.

Saturday, June 12, 1880.

An adjourned meeting of the Society was holden at 12 o'clock, President Hayes in the chair.

The following named persons having been recommended by the Executive Committee, were, on ballot, duly elected members of the Society :

Charles W. Kennard, of Boston.
Stephen C. Chase, of Tewksbury.
Thomas Prince, of Boston.

The meeting was then dissolved.

BUSINESS MEETING.

Saturday, July 3, 1880.

A duly notified stated meeting was holden at 11 o'clock, Vice-President John B. Moore in the chair.

Albert M. Davenport, of Watertown,

having been recommended by the Executive Committee, was, on ballot, duly elected a member of the Society.

Adjourned to Saturday, August 7.

BUSINESS MEETING.

Saturday, August 7, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

Marshall P. Wilder, who was present at a business meeting for the first time since the severe accident which he met with nearly a year and a half ago, said that he came under a sense of duty, though a sad duty, to pay a tribute to the memory of one of the oldest and most esteemed Corresponding Members of the Society, Robert Buist, of Philadelphia. It had been his privilege to be acquainted with Mr. Buist for nearly half a century. He was interested in all that pertains to the welfare of the human race. For a long course of years he stood at the head of our florists and seedsmen in the introduction and dissemination of new and valuable productions. Many of the most distinguished collections in our land can trace their beginning and much of their excellence to his enterprise and good taste. It was through him that the *Poinsettia pulcherrima* and the *Verbena Tweediana* (the latter the type of the numerous varieties which ornament our gardens), and a host of other now popular plants were introduced. His interest in fruit culture was shown by the fact that he was for many years Vice-President for Pennsylvania of the American Pomological Society. In all his dealings he sustained a character for honor and fairness. But he has done more than to raise fine trees or plants; he has trained up and sent forth, throughout the land, more young men to be an honor to horticulture than any other person in the profession. Nor should mention be omitted of the Christian character of Mr. Buist, who always closed his grounds on the Sabbath, and attended the worship of the sanctuary.

Mr. Wilder closed by presenting the following resolutions:

Whereas, Information has been received of the decease of Robert Buist, one of our oldest and most esteemed Corresponding Members, therefore, be it

Resolved, That in the death of Mr. Buist, the Massachusetts Horticultural Society has lost one of its oldest and most esteemed members, and our country one of its most enterprising, useful, and time-honored standard-bearers in horticulture; one, who by his eminent services in rural culture, and his love of the beautiful in nature, has done much to improve the taste and promote the prosperity and happiness of the American people.

Resolved, That while we deplore the loss of Mr. Buist, we rejoice that his example will still live; that his works will still speak to us, and that his influence in promoting rural art and rural taste will continue to bless those who survive him.

Resolved, That we sympathize with his family in this bereavement; that these proceedings be entered on our records, and that a copy of the same be sent to the family of the deceased.

William C. Strong seconded the resolutions, expressing the pleasure of the meeting that Colonel Wilder was able to attend and present them; and added, that it was enough to say of Mr. Buist that he was a worthy associate of Colonel Wilder. Not only his worldly interests, but his affections, were engaged in his profession.

Robert Manning spoke of Mr. Buist as a connecting link between the horticulturists of this and earlier generations, Hibbert and Buist having, in 1830, purchased the grounds of Bernard M'Mahon, who published the "American Gardener's Calendar" in 1806. He also spoke of the integrity and uprightness of Mr. Buist's character.

President Hayes added his tribute to the memory of Mr. Buist. His reputation as a horticulturist was as wide as the country, and the gardens throughout the land have all been benefited by his work.

The resolutions were unanimously passed.

On motion of Robert Manning it was voted that the officers and members of the American Association for the Advancement of Science are cordially invited to visit the halls, library, and exhibitions of this Society during the coming session of the Association in this city.

Agreeably to the Constitution and By-Laws the President appointed the following Committee to nominate suitable candidates for the various offices of the Society for the ensuing year: Charles M. Hovey, Charles O. Whitmore, Joseph H. Woodford, Charles M. Atkinson, William H. Spooner, Charles N. Brackett, and Charles F. Curtis.

On motion of Edwin A. Hall it was voted that a committee of three be appointed by the chair to prepare resolutions in memory of Daniel Waldo Lincoln; and Charles M. Hovey, O. B. Hadwen and Edwin A. Hall were appointed as that Committee.

On motion of Benjamin G. Smith it was voted that a committee of three be appointed to prepare resolutions in memory of Peter Smith. Benjamin G. Smith, William C. Strong, and Robert Manning were appointed as that Committee.

Adjourned to Saturday, September 4.

BUSINESS MEETING.

SATURDAY, September 4, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

William C. Strong, from the Committee to prepare resolutions in memory of Peter Smith, reported the following:

Peter Smith, of Andover, a member and benefactor of this Society, died at his residence, July 6th, in his seventy-eighth year. He was born in Brechin, Scotland, September 10th, 1802, and came to this country at the age of twenty years, and associated himself in business with his brother, who had preceded him. Mr. Smith has held a high position as an intelligent and successful manufacturer and merchant. He was a man of remarkable integrity and high-minded purposes, and in all his actions secured the implicit confidence of every one. His rare wisdom and accurate judgment in business affairs will be missed by those who so often sought his advice. Possessing abundant means he contributed liberally and cheerfully to such objects, public and private, as commended themselves to his judgment. His charities were carefully and judiciously bestowed, and he will be remembered with gratitude and affection by the numerous recipients of his kindness and bounty. Mr. Smith was very fond of horticulture. His love of flowers amounted almost to a passion. He loved to see them and to talk about them. The choicest varieties of flowers and fruits blossomed and ripened in his garden and greenhouses. In all the relations of life, as the head of a family, a citizen, and a Christian, he was universally respected and honored.

Whereas, God in his all wise providence has seen fit to remove by death a much esteemed and valued member of this Society, Peter Smith, therefore

Resolved, That we have learned with deep regret of the death of Mr. Smith, who was as beloved and esteemed by us for his kindness as a friend and associate as he was respected for his honesty and integrity as a merchant.

Resolved, That a copy of these resolutions be transmitted to the family of our departed friend, as a mark of our sympathy with them in their bereavement.

The resolutions were unanimously passed.

Charles M. Hovey, Chairman of the Committee to prepare resolutions in memory of Daniel Waldo Lincoln, presented the following:

The recent death of D. Waldo Lincoln, an old and honored member of the Massachusetts Horticultural Society, has caused a deep feeling of sorrow to every member of this association, therefore

Resolved, That in his death the Society mourns the loss of one of its earnest co-workers in its useful sphere, and one who in his early manhood took the liveliest interest in everything pertaining to horticulture. He was one of the first to introduce to our collections the magnificent *Victoria regia*, which he successfully cultivated and flowered at his grounds in Worcester, and his labors in the infancy of pomology were eminently valuable and important, in the diffusion of a knowledge of fruit culture throughout the heart of the Commonwealth. Passing some time ago from the domain of horticulture to the laborious duties of his later years, he exhibited in them the thoroughness and ability which characterized all that he undertook, and though absorbed in public duties which severely taxed his energies, he did not lose his earlier love for the gratifying pursuit which was the engrossing employment of his younger days.

Resolved, That in his death this Society loses one who, by his practice and example, conferred renown upon the science to which he devoted so many years, and that every member sympathizes with his family in their great bereavement.

Resolved, That these resolutions be entered upon the records, and a copy be forwarded to the family of the deceased.

Mr. Hovey added that he had known Mr. Lincoln for many years, and had had much correspondence with him. He was a worthy son of a worthy sire, and exerted a lasting influence for good in the central county of the Commonwealth.

President Hayes, before putting the question, asked permission to add his tribute to the memory of Mr. Lincoln. As a director of the Boston and Albany Railroad he was intimately acquainted with Mr. Lincoln, the President. It was a great delight to Mr. Lincoln to turn from railroad matters to discuss some new flower or superb fruit, and he was proud that so many of the directors were interested in horticulture. He often spoke of his own early interest in horticulture; and one occasion and the pleasure which Mr. Lincoln

took in it—when, on the adjournment of a meeting, the directors visited the beautiful grounds of Ignatius Sargent, of Brookline, a member of the board—was especially remembered by the speaker. Mr. Lincoln's earnest mind was shown in every work he undertook, and not only this Society but the community have lost a most worthy man.

The resolutions were unanimously passed.

C. M. Hovey, chairman of the Nominating Committee, asked for another week in which to prepare their report, which was granted.

The following named persons, having been recommended by the Executive Committee, were on ballot duly elected members of the Society:

HIRAM A. OAKMAN, of North Marshfield.
ALBERT W. NICKERSON, of Dedham.
STARKES WHITON of Hingham Centre.
F. J. DUTCHER, of Hopedale.

Adjourned to Saturday, September 11.

BUSINESS MEETING.

SATURDAY, September 11, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

Charles M. Hovey, Chairman of the Nominating Committee, presented the report of that committee, which was accepted. It was voted that the Committee be continued and requested to nominate candidates in place of any who may decline before the election.

The meeting was then dissolved.

BUSINESS MEETING.

SATURDAY, October 2, 1880.

A stated meeting of the Society, being the annual meeting for the choice of officers, was holden at 11 o'clock, President Hayes in the chair.

The Recording Secretary stated that notice had been given of the meeting in accordance with the Constitution and By-Laws.

The chair appointed John G. Barker, E. W. Buswell, and John C. Hovey, a committee to receive, assort, and count the votes given, and report the number.

The polls were opened at five minutes past eleven o'clock.

Rev. A. B. Muzzey, from the Committee on Publication, announced that the History of the Society was expected to be ready for distribution to subscribers early in the next week, and stated that, having carefully examined the manuscript of the work, he wished to congratulate the Society on the completion of this interesting volume, and trusted that every member would supply himself with a copy.

The President said that he was much gratified at the announcement of Mr. Muzzey, and that, having also examined the work, he was able to join in the approval which the Committee had given it, and to speak of it as a book which should be in the possession of every member.

Marshall P. Wilder spoke of the accuracy of the Society in the nomenclature of fruits and flowers, and of its influence in promoting such accuracy throughout the country, of which he saw the evidence in the correctness of the names of fruits, during a visit to the orchards of California. He spoke of the interest which he had felt in the Society from the beginning, and said that all would want to read the History, for it would perpetuate the names of many whom we have loved and of others who will soon join them.

Charles M. Hovey said that, as one of the Committee having the work in charge, he read the manuscript as first prepared, which gave an account of the connection of the Society with Mount Auburn, and of the labors of Gen. Dearborn, whose whole heart was in the Experimental Garden. He trusted that we should find in the volume what we should love to read,—a record of men who have served the Society faithfully, and whose memory we revere.

The polls were closed at five minutes past twelve o'clock. The Committee to receive, assort, and count the votes given, and report the number, reported by their Chairman that the whole number was seventy-seven; necessary for a choice, thirty-nine; and the candidates having that number were, agreeably to the Constitution and By-Laws, declared by the President to be elected officers and standing committees of the Society for the year 1881.

The following named persons, having been recommended by the Executive Committee, were, on ballot, duly elected members of the Society:

George O. Wales, of Braintree.
Hon. John S. Brayton, of Fall River.
John L. Gardner, of Brookline.
Mrs. E. C. Pickering, of Cambridge.
Mrs. J. Marcou, of Cambridge.

Adjourned to Saturday, November 6.

BUSINESS MEETING.

Saturday, November 6, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, Vice-President Benjamin G. Smith in the chair.

Marshall P. Wilder, from the Executive Committee, reported a recommendation that the amount to be offered for Prizes and Gratuities for the year 1881 be $3,050. The Committee also recommended the appropriation of $200 for the Library Committee for the purchase of magazines and newspapers, binding of books, and incidental expenses of the Committee; $150 for the Committee on Publication and Discussion; and $250 for the expenses of the Committee of Arrangements—all these amounts being the same as were appropriated for 1880. The report was accepted, and agreeably to the Constitution and By-Laws was laid over until the stated meeting in January.

Charles M. Hovey, Chairman of the Committee appointed November 1, 1879, to procure a portrait of Charles O. Whitmore, Chairman of the Finance Committee, made a verbal report that a portrait had been procured and placed in the Hall without expense to the Society.

John Owen presented the following preamble and resolutions in memory of Dr. Charles C. Hamilton:

Whereas, Our Society has intelligence of the sudden death of one of its most distinguished Corresponding Members, the late

Charles Cotnam Hamilton, M.D., of Canard, King's County, Nova Scotia,—one who has done much to advance scientific and practical agriculture and pomology in all the British Provinces of America, and

Whereas, Dr. Hamilton's progressive ideas and valuable contributions to his favorite department of knowledge have not been confined to his native valley of Cornwallis, made famous largely by his unceasing exertions, but covered a wider field of operations by his sympathy with congenial minds (not merely in the Dominion but in this country), by his writings, and by the frequent exhibition here of the proofs of his success, obtained under circumstances of climate and soil less friendly to farm and garden culture than our own, and

Whereas, In his character as a private citizen, and as a public man, and throughout a long, extensive, and useful professional career he united in himself those elements of human greatness and goodness which won for him the admiration and love of all brought within the circle of his influence and action, therefore,

Resolved, That in the death of Dr. Hamilton not only this Society but the whole North American community suffers a severe and irreparable loss.

Resolved, That the strong bond of coöperation and the ties of no common friendship, are hereby sundered, to be reunited, we trust, in that spirit-peopled land of perpetual bloom and fruitage, beyond the grave, while his example still remains to cheer and strengthen us.

Resolved, That these sentiments of respect and affection, with the earnest expression of sincere condolence, be presented to the bereaved family of the deceased.

The resolutions were seconded by Marshall P. Wilder, who said he had come, at considerable inconvenience, to express his grief at the death of Dr. Hamilton, and his sense of the loss of a Vice-President of the American Pomological Society. Dr. Hamilton was a genial, gentle, and Christian man, and the speaker agreed with all said in his praise in the resolutions. No man in Nova Scotia has done so much for agriculture, horticulture, and the medical profession. In all that seeks to promote the welfare of mankind he was foremost. He was president of the Fruit Growers' Association of Nova Scotia, and his skill as a fruit grower was attested by a bunch of Black Hamburg grapes, grown in the open air in his garden, and

brought by his son to the speaker, who placed it on the exhibition table before the meeting. Dr. Hamilton's death was caused by exhaustion from attending agricultural and horticultural fairs, which he had continued for three successive weeks though warned by his family that he was over-exerting himself.

Charles M. Hovey said that he had known Dr. Hamilton as Vice President of the American Pomological Society, and as a man of excellence, of commanding presence, and of great zeal and perseverance in horticulture, and he felt his loss deeply.

The presiding officer spoke of Dr. Hamilton as remarkable for his skill as a physician, and distinguished as a horticulturist and a warm hearted, genial gentleman.

The resolutions were unanimously adopted.

Charles M. Hovey presented the following resolutions in memory of Dr. Augustus Torrey:

The Massachusetts Horticultural Society, having learned with profound regret of the death of Dr. Augustus Torrey, of Beverly, an old and honored member,

Resolved, That in the death of Dr. Torrey the Society has lost another of its older members, who has for many years honored it by his presence, encouraged it by his example, and aided it by his frequent contributions of beautiful fruits.

Resolved, That the members are duly sensible of the services of Dr. Torrey in the cause of horticulture, as well as of his life long labors in behalf of suffering humanity. An able and eminent physician, attentive to his arduous duties, he still found leisure moments which he gave to the cultivation of his garden. Courteous and genial in his intercourse; kind and considerate to those whom it was his duty to serve; an upright man, a sincere friend, and an esteemed citizen, he leaves a record that is an honor to himself and to the science which was his chosen profession.

Resolved, That in the death of Dr. Torrey this Society keenly feels the loss of one of its older associates and continued friends, and desires to express its appreciation of the labors of those who in earlier days contributed so much to its influence, and who have been interested in its welfare.

Resolved, That the members deeply sympathize with the family in their great bereavement and sorrow.

Resolved, That these resolutions be entered upon the records, and that a copy be transmitted to the family of the deceased.

Mr. Hovey added that he had known Dr. Torrey for thirty years, and that he was interested in all branches of horticulture, and always came to the annual exhibitions, bringing choice specimens of fruits. By his genial manners and his zeal and assiduity as a horticulturist he aided to bring the Society to the position it now occupies, and which he hoped the younger members would maintain.

Rev. A. B. Muzzey seconded the resolutions. He said that he had probably known Dr. Torrey longer than any other person present,—they having been college class-mates. He was a sincere and good man, whose whole character might be held up as a model. He was a great lover of horticulture, and made valuable contributions to the exhibitions of the Society. At the last meeting of the Society, when he sat by the side of the speaker, he seemed much affected by the death of his wife and soon followed her. He was a man whom we need have no fear of over-praising, and a great loss to the Society.

Marshall P. Wilder desired to express his concurrence in what had been said. The last time he met Dr. Torrey, the latter spoke of the great pleasure he felt in the meeting, but said, "We shall not stay here much longer."

The resolutions were unanimously passed.

Malcolm C. Greene, of Dorchester, and
James A. Rumrill, of Springfield,

having been recommended by the Executive Committee, were, on ballot, duly elected members of the Society.

Adjourned to Saturday, December 4.

BUSINESS MEETING.

Saturday, December 4, 1880.

At the last meeting the Society adojurned to 11 o'clock today, but as no quorum was present it

Adjourned to Saturday, December 11.

BUSINESS MEETING.

SATURDAY, December 11, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

The Annual Report of the Committee on Plants and Flowers was read by William H. Spooner, Chairman. Accepted and referred to the Committee of Publication.

Mr. Spooner presented the following vote:

Voted, That the Prospective Prize of $40 for the best Seedling, Flowering or Foliage plant (other than Rose, Camellia, Azalea Indica, Tree Pæony, Hardy Rhododendron, or Hardy Azalea,) be awarded to Joseph Tailby for the Seedling Carnation Grace Wilder, as recommended in the report of the Committee on Plants and Flowers.

On motion of W. C. Strong, seconded by C. M. Hovey, the above vote was laid on the table.

The annual report of the Committee on Fruits was read by John B. Moore, Chairman.

The Annual Report of the Committee on Publication and Discussion was read by William C. Strong, Chairman.

The Annual Report of the Committee on Gardens was read by Benjamin G. Smith, Chairman.

The Annual Report of the Committee on the Library was read by Robert Manning, who also read his annual report as Secretary.

These reports were severally accepted and referred to the Committee on Publication.

On motion of John C. Hovey further time was granted to the Committee on Vegetables and the Committee of Arrangements to present their reports.

The President, as Chairman of the Executive Committee, presented the List of Prizes for 1881, with the approval of that committee. It was voted that the List of Prizes be laid on the table for one week for examination by the members.

JOHN E. PEABODY, of Salem,

having been recommended by the Executive Committee, was, on ballot, duly elected a member of the Society.

Adjourned to Saturday, December 18.

BUSINESS MEETING.

SATURDAY, December 18, 1880.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

C. H. B. Breck, Chairman of the Committee of Arrangements, asked further time to report, which was granted.

The List of Prizes for the year 1881 was taken from the table, and on motion of John B. Moore was accepted, adopted, and referred to the Committee on Publication. It was voted that the Committee on Establishing Prizes have liberty to add such Special Prizes as may be offered to the Society, subject to the approval of the Executive Committee.

NATHANIEL T. KIDDER, of Boston, and
HENRY H. WITHINGTON, of Jamaica Plain,

having been recommended by the Executive Committee, were, on ballot, duly elected members of the Society.

The meeting was then dissolved.

REPORT

OF THE

COMMITTEE ON PLANTS AND FLOWERS,

FOR THE YEAR 1880.

By WILLIAM H. SPOONER, Chairman.

Your Committee are enabled to report a continued interest in the work of the Society in this department. The principal exhibitions have been well sustained, and the weekly shows have found competitors for most of the prizes offered, and we are led from the year's experience to commend the wisdom of returning to the system of weekly prize exhibitions, even if the amount of the money prizes is much smaller than formerly; contributors appearing usually to consider an award of a first or second prize as of far more value than a like or even a larger sum in a gratuity.

We are pleased to notice a very great increase in the exhibits of choice and rare plants, and the idea has suggested itself to your Committee, and to others of the active members of the Society, that a change might be made in the prizes for greenhouse plants at the Annual Exhibition by the substitution or addition of another class of prizes, perhaps in silver cups, and making the present class of money prizes of a smaller amount, to be awarded for a smaller class of plants. The Committee are of the opinion that such a course would add greatly to the interest of this show.

AZALEA AND ROSE EXHIBITION.

March 18.

Hardy Perpetual Roses, forced. — The only competition in

these was between John B. Moore and Joseph Tailby. Mr. Moore was first with twelve cut blooms, very fine flowers, of

Alfred Colomb.	Mabel Morrison.
Capt. Christy.	Marquise de Castellane.
Étienne Levet.	Mme. Baronne de Rothschild.
Gen. Jacqueminot.	Paul Neron.
Glory of Waltham.	Prince Camille de Rohan.
John Hopper.	Sir Garnet Wolseley.

He was also first for six cut blooms, with

Dupuy Jamain.	Mme. Chas. Crapelet.
Édouard Morren.	Marie Baumann.
Lyonnais.	Victor Verdier.

There were no forced roses in pots exhibited.

Peter Henderson & Co., of New York, exhibited at this show the new Tea rose American Banner, a sport from Bon Silene, with striped flowers; we hardly think it will prove a valuable acquisition.

February 21st, F. L. Harris exhibited a hybrid seedling rose—a cross between the Cherokee and Isabella Sprunt, with the general characteristics of the former and the color of the latter.

March 13th, there was shown by Joseph Tailby a new Hybrid Perpetual rose, called Rosy Morn; color delicate peach shaded to salmon rose, large flower, delicately scented.

Indian Azaleas. — Marshall P. Wilder was again the only contributor in this department. His plants were fine, but we omit the list of varieties as they were very much the same as those exhibited by him last year.

Orchids were shown by F. L. Ames, James Cartwright, and John L. Gardner; the latter exhibited a very fine plant of *Dendrobium nobile*, remarkably well grown.

At the Chrysanthemum Show, November 10th, F. L. Ames presented particularly fine orchids, taking the first prize for these plants, with *Dendrobium chrysanthum*, *Oncidium tigrinum*, and *Cypripedium Harrisianum;* and the second prize with *Cypripedium Dominianum*, *Chysis bractescens*, and *Rodriguezia secunda*.

Mr. Ames also took the first prize for a single plant with *Vanda cærulea*, and the second with *Oncidium macranthum*. He also exhibited for the first time the beautiful new *Cypripedium Spicerianum*.

January 3d, Joseph Tailby exhibited a fine plant of *Cypripedium insigne*, having nineteen flower spikes with two perfect flowers on each, and one of the spikes developing a third bud.

We missed C. B. Gardner's fine Cyclamens this season. Excellent Primulas were shown by Hovey & Co. and John L. Gardner; Cinerarias by John B. Moore, and Calceolarias by John L. Gardner.

Hyacinths. — This exhibit was made by John L. Gardner, and was grand; besides his prize lot, he had a very choice collection grown in pots or pans twelve inches in diameter and about eight inches deep, with from nine to thirteen bulbs in each; the flowers were in perfect condition for display and were most skillfully grown. Mr. Gardner was awarded the first prize, for

Gladiator, single red.
Lady Stanhope, single violet.
Mr. Thackeray, " "
Mont Blanc, single white.
Snowball, " "
Kaiser Ferdinand, single blue.
Czar Peter, " "
Minister Thorbecke, " "
Louis Philippe, double blue.

In his general collection Mr. Gardner had

Maria Catharina, single red.
Unica Spectabilis, single pink.
La Belle Blanchisseuse, single white.
Mirandolina, single white.
Nimrod, single purple.
Grand Lilas, single light purple.
La Nuit, single black-blue.
Othello, double "
Noble par Mérite, double pink.

RHODODENDRON SHOW.

June 5.

Hardy Rhododendrons and Azaleas. — As last year, President Francis B. Hayes was the only exhibitor for the Hunnewell Premiums, receiving the first and second prizes for twelve named varieties, and for the single truss of Rhododendrons; also the first for twenty-four hardy Azaleas. E. Sheppard was first for twelve trusses of Azaleas. For a single truss the first and second prizes went to President Hayes for beautiful blooms of Ornatissimum and Souvenir de Prince d'Orange.

H. H. Hunnewell presented as usual a choice collection of Rhododendrons and Azaleas, but not for competition.

Clematis. — The competition for the prizes offered this season for the first time was not as large as might have been expected. Those for the early flowering varieties were taken by J. H. Woodford and John B. Moore. Of the late varieties, Francis B. Hayes was the only contributor.

ROSE EXHIBITION.

June 18.

The extremely warm weather in June was demoralizing to hardy roses; consequently, excepting a few individual stands, the exhibition was not up to the standard of last year; though, on account of the heat, the date was changed from the 22d to the 18th. The principal contributors were John B. Moore, William Gray, Jr., Francis B. Hayes, J. S. Richards, and William H. Spooner.

Hardy Perpetuals. — For the best twelve varieties, John B. Moore was first with

Comtesse d'Oxford.	Mme. Baronne de Rothschild.
Étienne Levet.	Mme. Marius Cote.
Ferdinand de Lesseps.	Mons. Boncenne.
François Michelon.	Mrs. Laxton.
Louis Van Houtte.	Mrs. Baker.
Marie Baumann.	Prince Camille de Rohan.

Francis B. Hayes was first with six varieties, but no list has been furnished the Committee.

William H. Spooner was first with three varieties: Mons. Boncenne, Thomas Mills, and Mme. la Baronne de Rothschild.

Moss Roses. — John B. Moore was first with six varieties, viz.:

Crested.	Mme. Ugale.
Four Seasons.	Zaïre.
Gracilis.	

Also for three varieties, with Mme. Surette, Mme. Alboni, and Salet.

Your Committee were again fortunate in having several silver cups to award as special prizes, besides the Challenge Cup of last year; with these continued inducements we venture to predict a very considerable addition to the competition another year.

A Silver Cup valued at $25, for three specimen roses of different

varieties, was awarded to Francis B. Hayes, for Mme. Lacharme, Pierre Notting, and Prince Paul Demidoff. These were truly superb flowers; the Mme. Lacharme was especially beautiful in size, form, and color, and this variety was probably never before exhibited in a more perfect condition.

A Silver Cup valued at $25, for six specimen roses of different varieties, was awarded to William Gray, Jr., for

Comtesse d'Oxford.	Ferdinand de Lesseps.
Étienne Dupuy.	Magna Charta.
Exposition de Brie.	Marquise de Gibot.

A Silver Cup valued at $25, for twelve specimen roses of different varieties, was awarded to John B. Moore, for

Comtesse d'Oxford.	John Hopper.
Étienne Levet.	Louis Van Houtte.
Ferdinand de Lesseps.	Mlle. Marie Rady.
François Michelon.	Mme. Baronne de Rothschild.
Gen. Forey.	Mons. Boncenne.
Horace Vernet.	Mons. E. Y. Teas.

A Silver Cup valued at $25, for three specimen roses of one variety, went to John B. Moore, for Sir Garnet Wolseley.

A Silver Cup valued at $25, for six roses of one variety, was awarded to William Gray, Jr., for Mme. la Baronne de Rothschild.

A Silver Cup valued at $25, for twelve roses of one variety, was awarded to John B. Moore, for Prince Camille de Rohan.

The Challenge Cup, valued at $150, was again awarded to William Gray, Jr., without competition. Your Committee did not consider the roses offered for this prize entirely worthy, but did not feel at liberty to withhold the award. The terms of this prize are that the winner shall hold it for three successive years, and this is the second award to Mr. Gray.

August 21st, President Francis B. Hayes exhibited a group of twelve Hybrid Perpetual roses of the Paul Neron variety, averaging six inches in diameter, and he has grown many even larger than this. We doubt whether any of the European growers can do as much. Indeed Mr. Hayes has had remarkable success in the cultivation of roses, having made continuous weekly exhibitions of fine blooms, — sometimes of better quality even than those of the Annual Rose Show, — and extending from June to October.

ANNUAL EXHIBITION.

SEPTEMBER 14, 15, 16, AND 17.

The Annual Exhibition of last year was considered the best in fine plants ever held by the Society, but that of this year exceeded even the best, and was truly grand in beautiful and rare specimens — far in advance of the anticipations of your Committee. The work of our Society shows an increasing tendency toward the encouragement of the cultivation of rare and choice plants, and it may be a question for further consideration whether we should not make two classes of prizes at our Annual Show; one for the larger and more remarkable specimens, and another for a smaller grade of plants.

The principal exhibitions of plants were made by S. R. Payson, H. H. Hunnewell, F. L. Ames, W. Gray, Jr., and President Hayes; all of them were of the finest quality, and the effect produced was like transporting the beholder to the luxuriant realms of the tropic zone.

TWELVE GREENHOUSE PLANTS.—The first prize was awarded to S. R. Payson for:

Adiantum Farleyense.
Alocasia metallica.
Anthurium Warocqueanum.
Croton Disraeli.
Croton Youngi.
Cyanophyllum magnificum.
Dieffenbachia Bausei.
Dracæna Mooreana.
Eurya latifolia var.
Ficus Parcelli.
Maranta Veitchii.
Nepenthes Hookeri.

The second prize was awarded to F. L. Ames for:

Acalypha mosaica.
Alpinea vittata.
Anthurium Warocqueanum.
Cordyline (Dracæna) indivisa.
Croton nobilis.
Croton Queen Victoria.
Croton variabilis.
Curculigo recurvata var.
Kentia australis.
Maranta Makoyana.
Phenecophorum Sechellarum.
Phyllotœnium Lindeni.

SPECIMEN PLANT, NOT VARIEGATED.—The first prize was given to Hovey & Co., for *Cycas revoluta;* the second prize to F. L. Ames for *Sciadophyllum pulchrum.*

SPECIMEN FLOWERING PLANT.—The first and second prizes went to H. H. Hunnewell for *Lapageria rosea*, and *Ixora coccinea.*

Variegated Leaved Plants, six varieties, to William Gray, Jr., for:

Agave schidigera.	*Anthurium crystallinum.*
Alocasia macrorhiza var.	*Dracæna Hendersonii.*
Ananassa sativa var.	*Fittonia argyroneura.*

Specimen Plant, variegated.—The first prize went to S. R. Payson for a beautiful plant of *Croton variegatum;* the second to John L. Gardner for *Eurya latifolia variegata.*

Caladiums.—William Gray, Jr., took the first prize for six, with

Boieldieu.	Meyerbeer.
Chantini.	Madame Duval.
Houletti.	Rogieri.

Hovey & Co. received the second for:

Alfred Bleu.	Prince Albert Edward.
Dr. Lindley.	Rossini.
Hérold.	Triomphe de l'Exposition.

Adiantums.—For six varieties S. R. Payson was first with:

A. amabile.	*A. gracillimum.*
A. cuneatum.	*A. scutum.*
A. formosum.	*A. setulosum.*

Hovey & Co. were second with:

A. amabile.	*A. cuneatum.*
A. concinnum.	*A. decorum.*
A. concinnum latum.	*A. excisum multifidum.*

Dracænas.—For six varieties, William Gray, Jr., was first with:

D. amabilis.	*D. Mooreana.*
D. Chelsoni.	*D. Shepherdii.*
D. magnifica.	*D. Youngi.*

Palm.—For a single specimen the first prize went to William Gray, Jr., for *Livistona rotundifolia;* the second to Hovey & Co. for *Pritchardia Pacifica.*

Nepenthes.—The first prize for three was awarded to F. L. Ames for *N. distillatoria, N. Chelsoni,* and *N. intermedia.* Mr. Ames also exhibited the new and rare *N. Veitchii.*

Agaves.—The first prize for six went to Henry Ross; the second to Hovey & Co., for:

A. applanata.	*A. heteracantha cærulea.*
A. cyanea.	*A. hystrix.*
A. Gilbeyii.	*A. Nissonii.*

Benjamin Gray contributed three species of *Nymphœa*, viz., *Devoniensis*, *cœrulea*, and *dentata*. Mr. Gray has given special attention to this class of plants, and these were well grown specimens, worthy of his acknowledged skill.

H. H. Hunnewell as usual exhibited a beautiful collection of choice plants, but they were not offered in competition for prizes. They were—

Alocasia gigantea.
Alocasia metallica.
Croton longifolium var.
Croton pictum.
Cyanophyllum magnificum.
Dieffenbachia imperialis.
Dieffenbachia Bausei.
Dracœna Harrisii.
Dracœna Youngi.
Musa ensete.
Musa superba.
Phyllotœnium Lindeni.
Sphœrogyne latifolia.

He also exhibited a fine plant of *Terminalia elegans* which, from its appearance, may prove a remarkably beautiful decorative foliage plant and useful for florists' purposes. The leaves are long and narrow, tapering to a point; in color a bronzy-green with numerous pinkish veins through them; midrib bright pink or red; under side light green. Williams says of this plant, "It grows in a regular pyramidal form, and the beauty of its outline and its handsomely marked and glossy leaves constitute it one of the most appropriate plants for the decoration of the dinner table, and a never failing source of pleasure in the stove."

From F. B. Hayes, came a fine specimen of the choice evergreen stove plant, *Cupania filicifolia.*

Dahlias have been shown in less quantity than before; excellent flowers were presented by John L. Gardner, Samuel G. Stone, James Nugent, and John Parker. At the Annual Exhibition Mr. Gardner was first for twelve flowers, with

Delicata.
Gladiator.
Harlequin.
James Cocker.
La Phare.
Miss Caroline.
Mrs. Henshaw.
Peri.
Pre-eminent.
Queen of Beauties.
Rifleman.
Titian.

John Parker was first for six, with

Gladiator.
James Cocker.
John Standish.
King of Primroses.
Monarch.
Paul of Paisley.

James Nugent was first for a single flower, with Peri.

Mr. Gardner exhibited his dahlias in a neat wooden stand, admirably designed for the purpose, after the English model. It is arranged in sections eighteen inches in length by twelve in width, to display six blooms, which are received in zinc tubes about three inches in depth (for holding water) in which are fitted wooden sockets for the flowers. These tubes are placed two and one-half inches from the edge of the stand and five inches from each other, and the whole rests upon supports from four to five inches high.

CHRYSANTHEMUM SHOW.

November 10.

This was noticeably fine in choice plants, which, together with the propitious weather, made it a very attractive exhibition.

H. L. Higginson, Henry P. Walcott, Norton Brothers, and James Comley were the contributors of plants. Mr. Higginson's plants were remarkably fine, giving evidence, as usual, of the skill of his gardener, Mr. Clark. Dr. Walcott also presented excellent plants. Those of Messrs. Norton, though not large, were well grown, as were also those of Mr. Comley.

Cut Chrysanthemum flowers were shown in larger numbers than ever before, and we notice this feature of the display with pleasure. The Chysanthemum is certainly a plant for the million,—easily grown either in the garden or the house, and we hope, with the proposed changes in the prizes offered for this class of plants and flowers, to see an exhibition next autumn such as has never been made in this country, and if our active members will unite to this end we can make it a success. Let us each make an effort, if only with a single plant or a few flowers, all contributing something towards a grand result.

H. L. Higginson was first for six large-flowered varieties, with

Bolivar.
Dr. Sharpe.
Golden Queen of England.
Hero of Stoke Newington.
Jardin des Plantes.
Prince of Wales.

H. P. Walcott was second, with

Bronze.
Julie Lagravère.
Mrs. Dixon.
Mrs. Forsythe.
Pink Perfection.
Souvenir de Mercédes.

Mr. Higginson was first with six Pompons, viz. :—

Bob.	La Fiancée.
Duriflet.	Model of Perfection.
Gen. Canrobert.	Nellie.

H. P. Walcott was first for four Japanese varieties, with M. Crousse, Fulton, Purple King, Bouquet Fait.

For a specimen plant, large-flowered, Mr. Higginson was first, with Golden George Glenny. Dr. Walcott was second, with Guernsey Nugget.

For a specimen plant, pompon-flowered, James Comley was first, with Model of Perfection. Mr. Higginson was second and third, with Boule de Neige and Niobe.

For a specimen plant of a Liliputian variety, Dr. Walcott was first, with Mrs. Hutt, and Mr. Higginson second, with Amietta.

For a specimen plant, of a Japanese variety, Dr. Walcott was first and second, with Figaro and Fleur Parfaite.

For cut flowers, twelve large-flowered varieties, Dr. Walcott was first, with a beautiful group of the best flowers of this class we have ever seen, viz. :

Bronze.	L'Orient.
Charles Montariol.	Mrs. Dixon.
Félicité.	Mrs. Forsythe.
George Peabody.	Mrs. Mary Morgan.
Guernsey Nugget.	Prince of Wales.
Jardin des Plantes.	Souvenir de Mercédes.

Francis B. Hayes was second, with

Alarm.	Lord Stanley.
Bronze Jardin des Plantes.	Miss Mary Morgan.
Empress of India.	Ne Plus Ultra.
Guernsey Nugget.	Progne.
Jardin des Plantes.	Rose Perfection.
Lady Slade.	Snowball.

For twelve cut flowers, pompon varieties, E. Sheppard was first, with

Anna.	Maroon Model.
Duriflet.	Mme. de Vatry.
Gen. Canrobert.	Nellie.
Golden Circle.	Norma.
La Fiancée.	Rose Trevenna.
Maria.	Volunteer.

Joseph Clark was second with

Bob.	Nellie.
Candeur.	Pasque Fleur.
Gen. Canrobert.	Perfection.
Goldfinder.	Rose Bella.
La Fiancée.	Stella.
Mme. Mary.	White Trevenna.

Having thus given an account of the special exhibitions of the year, we proceed to make some comments on the most prominent flowers for which prizes were offered at the weekly shows, closing with remarks on some of the most interesting miscellaneous plants exhibited.

Iris Kæmpferi and varieties. — We are pleased to notice an increased cultivation of this beautiful plant, the contributors being F. Parkman, B. D. Hill, and Woolson & Co. of Passaic, N. J.; all exhibiting seedling varieties, many of the flowers of large size, indicating the possibilities of this plant for the future.

Carnations. — Joseph Tailby has again shown his seedling, Grace Wilder, in fine condition, and has entered it for the prospective prize for a seedling flowering plant. Your Committee had an opportunity of seeing the plants in a most luxuriant state last May at Mr. Tailby's place in Wellesley, where he had a large house planted mostly with this variety, which had been in bloom all winter; and we have no hesitation in commending it as one of the best seedling carnations we have ever seen. A First Class Certificate of Merit was awarded to it last year, and we now unanimously recommend that the Prospective Prize of $40, for the best seedling flowering or foliage plant, be awarded to Joseph Tailby for the Carnation Grace Wilder.

Mr. Tailby has also exhibited several other seedlings, viz:

No. 9, or *Fred Johnson.*—Flower medium in size, finely fringed, color bright carmine.

Princess Louise. — Large flower, deeply fringed, color bright pink, delightfully scented.

Dr. Whitney. — Flower medium sized, fringed, color pinkish carmine, some of its inner petals rolling up and showing the light color of the under surface; very fragrant.

Messrs. Hovey & Co. have several times exhibited their seedling carnation, Magnificent, which they offer for the prospective prize

for a seedling flowering plant. It has a large full flower, color bright scarlet shading to cherry; apparently a free bloomer and vigorous grower, but not strongly scented. We have not seen the plant growing. It was raised in 1878, and exhibited in February, 1879.

Perennial Phloxes, July 24th and August 7th, were shown only by John B. Moore, to whom all the prizes were awarded, for fine displays of flowers in the following varieties:

Auguste Rivière.	Mme. Froment.
Belldonville.	Mme. Moisset.
Charlotte Saison.	Mme. Prosper Laugier.
Czarina.	Mons. Aubry.
Député Berlet.	Mons. Valden Chuck.
D. Parrie.	Pandore.
Figaro.	Princess Louise.
Greville.	Richard Larios.
Heloïse.	Saison Rival.
Le Pôle Nord.	Van Houtte.
Michael Buchner.	White Lady.

August 7th there came from Hovey & Co. a new phlox, Pictet de la Rive; color pure white.

Gladioli. — The contributions to this department have been less than in former years. The most frequent exhibitors were James Cartwright and George Craft. Mr. Cartwright's were chiefly seedlings, which were noticeably fine; his named varieties were also choice flowers, well grown. His seedling, No. 84, is particularly promising, having a strong spike of well arranged flowers, in color similar to Meyerbeer, of a brilliant fiery red with light rose throat.

James F. C. Hyde has again exhibited his seedling, Hyde's White, which maintains its character of last year. Your Committee had the satisfaction of seeing it growing in Mr. Hyde's grounds at Newton this season, where it was conspicuous for the strength of its spike and the size and substance of its flowers; but as there was some mixture in the stock, they would prefer to see it another season before passing judgment. Several other seedlings were noticed at the same time, with strikingly developed double flowers, of large size, which may lead to a new class. The Annual Exhibition was unusually deficient in gladioli; partly owing doubtless to the heavy rains of the previous day.

Lilies. — Hovey & Co., Francis B. Hayes, B. G. Smith, and Mrs. E. S. Joyce were the contributors for these prizes, with excellent flowers; the first mentioned with a very large display, comprising *Lilium speciosum*, varieties Melpomene, Thalia, Polyhymnia, and Clio. These are beautiful and distinct seedlings of *L. speciosum*, remarkable for the size of the flowers, the very broad, smooth, flat petals, their deep coloring, and the large, bold, blood-red spots, which distinguish them at once from the parent species. They are dwarfer in habit than *L. speciosum*, with more thickly-set foliage, and shorter pedicels to the blossoms. Melpomene is remarkable for the depth of its color, which nearly covers the petals, leaving only a distinct white border upon each segment of the flower. The other varieties named are quite as remarkable for their distinct character.

Hovey & Co.'s collection also included the two following new lilies:

L. Leichtlini. — This is undoubtedly the most novel of any of the lilies recently introduced, its clear lemon-yellow flowers, conspicuously spotted with brown or claret color, being quite unlike those of any other lily. As yet the bulbs have not acquired sufficient strength to develop its real merits, but it promises to become one of the most distinct and desirable lilies. The flowers are not very large, — about four inches across; the petals are deeply revolute or reflexed; anthers brownish red; stems rather slender, two to three feet high, with from three to five flowers in a loose umbel; pedicels short and erect; the flower nodding and quite scentless.

L. Batemanniæ. — This quite distinct new and fine lily is placed by Mr. Baker in the Martagon group, and is stated to be closely allied to *L. Leichtlini*. It certainly has some resemblance to that species, but the flowers on our plant were open, cup shaped, about the same size, and not reflexed. The color is a clear, deep apricot, quite unspotted, and produced in umbels of from six to eight; stamens apricot color, style chocolate; stems, on moderately strong bulbs, three feet high, rather slender, with narrow foliage. It appears to be a species or variety worthy of a place in every collection.

November 20th Hovey & Co. placed on the table a beautiful flower of *Lilium Neilgherriense*. This is somewhat in the style of *L. longiflorum*, and doubtless one of the most beautiful of the

trumpet-flowered lilies. It is an Indian plant, and it is doubtful whether it can be cultivated in the open ground. Experiment only can determine this; but as a greenhouse species it must hold a high rank. The stems are rather slender, growing from two to three feet high, with rather long, linear leaves, and terminated with from one to three large trumpet-shaped flowers, six to seven inches long, of a pale lemon color; style slender, stamens yellow. A grand species.

The above descriptions are by Charles M. Hovey.

July 24th President Hayes presented a flower of a new lily called Kahamii, somewhat in the way of *Lilium pulchellum*, but in color a bright scarlet.

Tropæolums.—The competition for these prizes was sharply contested, and the exhibition was finer than ever before. March 18th and May 8th, Charles F. Curtis presented a fine stand of Spooner's New Fringed tropæolum; color deep orange, base of the divisions dark maroon, petals deeply fringed, foliage light green, with much the character of *T. peregrinum;* a remarkably strong grower and profuse winter bloomer for the house. In the open ground it does not grow as luxuriantly or flower as freely.

August 14th, we had from Mrs. George F. Fisher an exceedingly pretty Tropæolum — a chance seedling which she has grown several years, with a small flower resembling that of *T. peregrinum* in form; color brilliant scarlet, a free bloomer, with dark blueish-green foliage.

Native Plants. — July 17th, Mrs. C. N. S. Horner exhibited a very large and well arranged collection of native plants, with their names. This was without doubt the best among the many fine exhibits she has made, and your Committee were glad of the opportunity to express the high estimation in which the members of the Society hold her attainments as a practical botanist. Mrs. Horner has been a frequent contributor to this department during the season. Miss Maria E. Carter shared the honors in this department on the 5th of June, receiving the second prize. E. H. Hitchings has also been a frequent and valuable contributor, and we mention, among other rare plants brought by him, *Liparis liliifolia*, found in Milton, and probably the only perfect specimen ever shown here. Mr. Hitchings has several times shown *Botrychium ternatum;* also *Chrysopsis falcata*, and very fine specimens of *Rhododendron Rhodora* (*Rhodora Canadensis*).

Bouquets, Baskets of Flowers, and Table Designs. — We regret to notice a falling off in the exhibits of these. We hope the ladies, who have sustained this department with so much taste and skill, will renew their zeal hereafter, as it is certainly a very pleasing feature of our shows. We shall also hope to see an improvement in the arrangement of the vases of flowers. The design of dried leaves and flowers by Miss E. H. Craft, at the Annual Exhibition, was particularly commendable for the artistic skill of its arrangement.

Miscellaneous Plants. — April 17th, William S. Ewell exhibited a set of very fine new Coleus of vigorous growth and in desirable colors, as follows:

Aurora.
Butterfly.
Clown.
Fame.
Firefly.
Glow.
Magic.
Sparkler.
Stella.
Sunbeam.
Surprise.

We had also from the same, October 30th and November 10th, Pansies in variety, most of them flowers of large size and well defined colors.

May 1st, we had from John C. Hovey, *Narcissus bicolor* and varieties. The former is perfectly hardy, and one of the most beautiful, with golden-yellow trumpet and white perianth. It is very sweet scented.

June 26th, from the same, new hardy *Opuntias* (Cacti), as follows:

O. speciosa. — Color golden yellow, base of petals deep purple.

O. Missouriensis. — Bright lemon yellow.

O. Rafinesquiana. — Large yellow flower, centre bright purple. Also *O. monacantha*, *O. nana*, and *O. vulgaris*.

May 15th, Jackson Dawson exhibited several very striking, new and rare shrubs; among them *Staphylea Bumalda*, with a pure white flower.

June 5, Hovey & Co. exhibited excellent seedling *Epiphyllums*. They also exhibited a flower of the new yellow chrysanthemum, Étoile d'Or, the well known Paris daisy, with a long-stemmed single flower; which, we should judge, might be well adapted for use among florists.

Also the following new *Echeverias: E. canaliculata*, *E. rubella*, *E. perbula*, *E. undulata*, and *E. Peacockii;* also, *Aloe hybrida maculata.*

From C. H. Hovey came the new *Echeveria Hoveyii*, with delicately variegated markings. If it should bear the sun in bedding, it will prove an acquisition. The following description is by C. M. Hovey:

Echeveria Hoveyii. — This very remarkably variegated form of the *Echeveria* is as conspicuous as it is entirely distinct and beautiful. It is a hybrid between *E. farinosa* and *E. metallica glauca*, having leaves narrower and larger than the latter, and thinner and broader than the former. The ground color is a pale bluish-green, with a stripe of clear rosy pink on each side of the midrib, and an edging of pure white. These colors are brought out deeper and richer in the hottest sun, which it stands with impunity, only losing its colors in the shade or in the depth of winter, and taking them on again as soon as the sun or bright light returns in spring. It will undoubtedly prove a grand plant for distinct lines or central groups in beds of succulent.

At the Rose Exhibition, Francis B. Hayes presented a splendid plant of *Bougainvillea glabra*, one of the best ornamental flowering plants, and considered the finest of the genus.

September 5th, Isaac Sprague exhibited excellent specimens of a variety of Oaks, as follows:

Quercus alba: White oak.
" *discolor:* Swamp White oak.
" *prinoides:* Dwarf Chestnut oak.
" *ilicifolia:* Scrub oak.
" *coccinea:* Scarlet oak.
" *rubra:* Red oak.

At the Chrysanthemum Show, Robert Manning exhibited fruit of several varieties of *Celastrus*, *Euonymus*, and *Symphoricarpus.*

Following is a summary of Plants and Flowers for which prizes have been offered during the season, but for which there has been no competition.

March 1, Rose and Azalea Exhibition. Hybrid Perpetual Roses in pots, Hardy Flowering Shrubs in pots, Tulips and Jonquils in pots.

May 8, Pelargonium Exhibition. Zonale, Bronze, and Double

Zonale Pelargoniums in pots; Spring Herbaceous Plants, open culture; Hyacinths, open culture.

June 5. Tree Pæonies; Hardy Flowering Shrubs, cut blooms; Clematis in pots.

June 18, Rose Exhibition. Herbaceous Pæonies, Summer Herbaceous Plants.

June 28. Delphiniums.

July 3. Japan Iris.

July 10. Hydrangeas, Amaryllis in pots.

July 17. Orchids.

July 24. Exotic Ferns.

July 31. Stocks.

September 14–17, Annual Exhibition. Lycopods, Sarracenias, Cacti, Succulents (other than Agaves, Yuccas, and Cacti), Tuberous Rooted Begonias, Evergreens for Hunnewell Premiums.

November 10, Chrysanthemum Show. Heliotropes in pots.

Many of these flowers were exhibited during the season, but not at the time named in the Schedule of Prizes.

The amount of prizes and gratuities awarded is $1,479 out of the appropriation of $1,500, leaving a balance of $21. Prizes have been awarded from the Hunnewell fund to the amount of $41.

All of which is respectfully submitted.

WM. H. SPOONER,
PATRICK NORTON,
E. H. HITCHINGS,
F. L. HARRIS,
WILLIAM J. VASS,
JAMES CARTWRIGHT,
CHARLES W. ROSS,

Committee on Plants and Flowers.

PRIZES AND GRATUITIES AWARDED FOR PLANTS AND FLOWERS.

JANUARY 3.

Gratuity :—

Joseph Tailby, *Cypripedium insigne*, ... $3 00

FEBRUARY 14.

Gratuities :—

James Cartwright, *Lælia anceps*, ... 2 00
William Gray, Jr., *Cypripedium villosum*, ... 3 00

FEBRUARY 21.

Gratuity :—

Joseph Tailby, *Lycaste Skinneri*, var., ... 1 00

FEBRUARY 28.

Gratuities :—

Hovey & Co., *Imatophyllum Van Houttei*, ... 1 00
" " Azalea Mattapan, ... 1 00

MARCH 6.

Gratuity :—

James Comley, Cut Flowers, ... 2 00

MARCH 13.

Gratuities :—

Joseph Tailby, Hybrid Perpetual Rose, Rosy Morn (new), . . 1 00
James Comley, Hybrid Perpetual Roses, ... 1 00

AZALEA AND ROSE SHOW.

MARCH 18.

INDIAN AZALEAS.—Six named varieties, in pots, Marshall P. Wilder, $15 00
Second, Marshall P. Wilder, ... 10 00
HYBRID PERPETUAL ROSES.—Twelve cut blooms, named varieties, John B. Moore, ... 5 00
Second, Joseph Tailby, ... 3 00
Six cut blooms, named varieties, John B. Moore, ... 3 00
TENDER ROSES.—Six cut blooms, named varieties, James Comley, . 2 00
Second, William J. Vass, ... 1 00

Orchids.—Winter blooming, three plants in bloom, F. L. Ames,	$10 00
Second, James Cartwright,	6 00
Single plant, in bloom, John L. Gardner,	5 00
Second, Hovey & Co.,	3 00
Cyclamens.—Six plants, in pots, in bloom, the second prize to James Cartwright,	3 00
Single plant, in bloom, Hovey & Co.,	2 00
Heaths.—Single plant, in bloom, John L. Gardner,	3 00
Primulas.—Three plants, in bloom, Hovey & Co.,	2 00
Second, John L. Gardner,	1 00
Cinerarias.—Four varieties, in pots, in bloom, the second prize to John B. Moore,	3 00
Third, John B. Moore,	2 00
Single plant, in bloom, John B. Moore,	2 00
Violets,—Six pots, in bloom, John L. Gardner,	3 00
Second, C. B. Gardiner,	2 00
Pansies.—Six distinct varieties, in pots, in bloom, John B. Moore,	3 00
Second, John B. Moore,	2 00
Third, John B. Moore,	1 00
Hyacinths.—Nine bulbs, in pots, in bloom, John L. Gardner,	5 00
Narcissus.—Four pots, two bulbs in each, John L. Gardner,	4 00
Camellias.—Display of named varieties, cut flowers, not less than twelve blooms, Hovey & Co.,	4 00
Second, Hovey & Co.,	3 00
Six cut blooms, John L. Gardner,	3 00
Cut Flowers.—Display, filling fifty bottles, not including roses, Mrs. A. D. Wood,	3 00
Basket of Flowers.—Best arranged, James O'Brien,	3 00
Gratuities:—	
Marshall P. Wilder, Azalea Decora,	2 00
James Comley, Cut Roses,	2 00
M. H. Merriam, " "	1 00
John L. Gardner, nine pans Hyacinths (splendid)	6 00
" " " six pans Polyanthus,	1 00
" " " two *Boronia megastigma*,	2 00
F. L. Ames, *Phalænopsis Schilleriana*,	5 00
" " " *Oncidium leucochilum*,	2 00
Hovey & Co., Seedling Camellias,	2 00
" " Collection of Plants,	6 00
Mrs. L. P. Weston, *Tropæolum tricolorum*,	1 00
Charles F. Curtis, Spooner's New Fimbriated Tropæolum,	1 00
Edwin A. Hall, *Cereus flagelliformis*,	1 00
William J. Vass, Passiflora flowers,	2 00
J. Warren Merrill, Ferns on Log,	1 00
E. H. Hitchings, *Hepatica triloba*,	1 00
Mrs. E. M. Gill, Azaleas and other Cut Flowers,	3 00
John B. Moore, Vase of Flowers,	2 00

MARCH 20.

Gratuity: —

James Comley, Roses, ... $1 00

MARCH 27.

Gratuities: —

John C. Hovey, *Narcissus Bulbocodium*, ... 1 00
Hovey & Co., *Cattleya citrina*, ... 1 00

APRIL 3.

Gratuities: —

Mrs. A. D. Wood, Cut Flowers, ... 1 00
Mrs. E. M. Gill, " " 1 00

APRIL 10.

Gratuities: —

James Cartwright, *Dendrobium Wardianum*, ... 3 00
Mrs. A. D. Wood, Cut Flowers, ... 2 00
Mrs. E. M. Gill, " " 1 00

APRIL 17.

Gratuities: —

Mrs. A. D. Wood, Cut Flowers, ... 2 00
Mrs. E. M. Gill, " " 1 00
James Comley, " Roses, ... 1 00
James Cartwright, Oxalis flowers, ... 2 00

APRIL 24.

Gratuities: —

Mrs. A. D. Wood, Cut Flowers, ... 2 00
Mrs. E. M. Gill, " " 1 00
James Comley, *Lilium candidum* flowers, ... 1 00
John L. Gardner, Plants, ... 5 00

MAY 1.

Gratuities: —

E. Sheppard, Cut Flowers, ... 1 00
Mrs. A. D. Wood, Cut Flowers, ... 1 00
Mrs. E. M. Gill, " " 1 00
William J. Vass, " Roses, ... 1 00
Mrs. C. N. S. Horner, Native Flowers, ... 1 00

PELARGONIUM SHOW.

May 8.

Pelargoniums. — Four named variegated Zonale varieties, William Gray, Jr.,	$5 00
Six named Show or Fancy varieties in pots, John L. Gardner,	6 00
Calceolarias. — Six varieties in pots, John L. Gardner,	5 00
Tulips. — Twenty-five blooms, distinct colors, John L. Gardner,	3 00
Second, J. S. Richards,	2 00
Table Design. — Other than a basket of flowers, John B. Moore,	3 00
Second, Mrs. E. M. Gill,	2 00

Gratuities: —

Charles F. Curtis, Spooner's New Fimbriated Tropæolum,	2 00
Mrs. E. M. Gill, Hydrangea Thomas Hogg,	2 00
John Parker, Pelargonium Peter Grieve,	1 00
William Gray, Jr., *Ananassa sativa aurea var.*,	3 00
J. Geist, Spike of *Lilium longiflorum*,	1 00
J. S. Richards, Collection of Tulips,	3 00
John L. Gardner, Collection of Plants,	10 00
Benjamin G. Smith, Pansies,	2 00
William J. Vass, Tea Roses,	3 00
John L. Gardner, Two Lobelia Plants,	2 00
Mrs. A. D. Wood, Cut Flowers,	2 00
E. Sheppard, " "	2 00
Miss E. M. Harris, Vase of Flowers,	2 00
E. H. Hitchings, Native Flowers,	2 00

May 15.

Gratuities: —

Jackson Dawson, Rare Shrubs,	1 00
E. H. Hitchings, *Rhodora Canadensis*,	1 00
James Comley, Cut Flowers,	1 00
Mrs. A. D. Wood, " "	1 00
Mrs. E. M. Gill. " "	1 00

May 22.

Gratuities: —

Marshall P. Wilder, Tree Pæonies,	2 00
E. A. Story, Shrubs,	1 00
Miss E. M. Harris, Vase of Flowers,	1 00
Mrs. E. M. Gill, Cut Flowers,	1 00
Mrs. E. S. Joyce, " "	1 00
Mrs. C. N. S. Horner, Native Flowers,	1 00

May 29.

Gratuity: —

Benjamin G. Smith, Rhododendrons and Azaleas,	1 00

RHODODENDRON SHOW.

JUNE 5.

Hunnewell Premiums.

HARDY RHODODENDRONS.—Twelve named varieties, one truss each, Francis B. Hayes,	$8 00
Second, Francis B. Hayes,	6 00
Single truss of blooms, Francis B. Hayes,	4 00
Second, Francis B. Hayes,	2 00
HARDY AZALEAS. — Twenty-four named varieties, one truss each, Francis B. Hayes,	12 00
Twelve named varieties, one truss each, E. Sheppard,	7 00
Cluster of trusses, of one variety, Francis B. Hayes,	2 00
IRIS (Tuberous Rooted). — Twelve named varieties, E. Sheppard,	4 00
CUT FLOWERS. — Display filling 100 bottles, Mrs. E. M. Gill,	4 00
Second, Mrs. A. D. Wood,	3 00
Third, George Craft,	2 00
NATIVE PLANTS. — Display of named species and varieties, Mrs. C. N. S. Horner,	4 00
Second, Miss Maria E. Carter,	3 00
CLEMATIS. — Display of cut blooms of early named varieties, Joseph H. Woodford,	3 00
Second, John B. Moore,	2 00
AZALEA MOLLIS. — Twelve trusses of different varieties, Francis B. Hayes,	8 00
Gratuities: —	
H. H. Hunnewell, Rhododendrons and Azaleas,	10 00
Francis B. Hayes, Collection of Rhododendrons,	5 00
James Cartwright, Orchids,	3 00
Miss E. M. Harris, Pæonies,	1 00
Hovey & Co., Display of Flowers,	5 00
E. A. Story, " "	1 00
Mrs. A. C. Kenrick, Display of Flowers,	1 00
Benj. G. Smith, Cut Flowers,	3 00
Francis B. Hayes, " "	3 00
E. Sheppard, " "	2 00
Mrs. E. S. Joyce, " "	2 00
George Craft, " "	2 00
E. H. Hitchings, *Liparis liliifolia*,	1 00

JUNE 12.

Gratuities: —	
F. L. Ames, Orchids,	5 00
Francis B. Hayes, Cut Flowers,	2 00
Mrs. E. M. Gill, " "	1 00
Mrs. A. D. Wood, " "	1 00
George Craft, " "	1 00
Mrs. C. N. S. Horner, Native "	1 00

ROSE EXHIBITION.

JUNE 18.

Special Prizes.

HYBRID PERPETUAL ROSES.—Twenty-four varieties, three specimens of each, a Challenge Cup, value $150, to be held by the winner against all comers for three consecutive years, and then to be his property absolutely, to William Gray, Jr.

Three Roses of different varieties, Francis B. Hayes, silver cup, value,	$25 00
Six Roses, of different varieties, William Gray, Jr., silver cup, value,	25 00
Twelve Roses, of different varieties, John B. Moore, silver cup, value,	25 00
Three Roses, of one variety, John B. Moore, silver cup, value,	25 00
Six Roses, of one variety, William Gray, Jr., silver cup, value,	25 00
Twelve Roses, of one variety, John B. Moore, silver cup, value,	25 00

Regular Prizes.

HARDY PERPETUAL ROSES.—Six new varieties, sent out since 1876, John B. Moore,	$6 00
Twenty-four named varieties, three of each, William Gray, Jr.,	20 00
Twelve named varieties, John B. Moore,	10 00
Second, William Gray, Jr.,	8 00
Third, Francis B. Hayes,	6 00
Six named varieties, Francis B. Hayes,	6 00
Third, John B. Moore,	4 00
Three named varieties, William H. Spooner,	4 00
Second, John B. Moore,	3 00
MOSS ROSES.—Six named varieties, three clusters of each, John B. Moore,	5 00
Second, William H. Spooner,	3 00
Three named varieties, three clusters of each, John B. Moore,	3 00
TEA OR BOURBON ROSES.—Twelve cut flowers, William J. Vass,	5 00
GENERAL DISPLAY.—J. S. Richards,	10 00
Second, John B. Moore,	8 00
Third, Francis B. Hayes,	5 00
STOVE AND GREENHOUSE PLANTS.—Six distinct, in bloom, F. L. Ames,	10 00
Second, Hovey & Co.,	8 00
SPECIMEN PLANT, of a kind for which no special prize is offered, regard being had to a new or a rare variety, E. Sheppard,	6 00
GLOXINIAS.—Six named varieties, in pots, Hovey & Co.,	5 00
SWEET WILLIAMS.—Thirty trusses, not less than six distinct varieties, E. Sheppard,	3 00
Second, James Nugent,	2 00
VASE OF FLOWERS.—Best arranged, the second prize to Mrs. E. M. Gill,	3 00

Gratuities:—

Norton Brothers, two Baskets of Roses,	$2 00
William J. Vass, Collection of Tea Roses,	3 00
W. C. Strong, Tea Roses,	3 00
F. F. Raymond, Moss Roses,	2 00
P. J. Saunders, Hybrid Perpetual Roses, in pots,	2 00
Warren Heustis, two Boxes of Roses,	2 00
Hovey & Co., Collection of Plants,	5 00
John B. Moore, Plants,	3 00
John L. Gardner, "	4 00
William S. Ewell, eight new Coleus,	5 00
Edwin A. Hall, *Cereus flagelliformis*,	1 00
Hovey & Co., Geraniums and Carnations,	1 00
E. Sheppard, Tuberous Begonias,	2 00
Woolson & Co., Passaic, N. J., Collection of Lilies,	2 00
Mrs. A. D. Wood, Cut Flowers,	3 00
George Craft, " "	2 00
James Nugent, " "	2 00
E. A. Story, " "	2 00
James Comley, " "	1 00
Mrs. E. S. Joyce, " "	1 00
E. Sheppard, " "	1 00
William J. Vass, " "	1 00
Miss A. C. Kenrick, " "	1 00
Woolson & Co., Native Flowers,	2 00
E. H. Hitchings, " "	1 00
Miss K. A. Hill, " "	1 00
Mrs. E. M. Gill, Roses and Cut Flowers,	2 00

STRAWBERRY SHOW.

JUNE 26.

CUT FLOWERS.—Display, filling one hundred bottles, Mrs. A. D. Wood,	$4 00
Second, George Craft,	3 00

Gratuities:—

Francis Parkman, *Iris Kæmpferi*,	2 00
B. D. Hill, " "	1 00
Francis B. Hayes, Display of Roses,	1 00
Joseph H. Woodford, Clematis and Calendula,	1 00
Mrs. E. S. Joyce, Cut Flowers,	1 00

JULY 3.

CARNATIONS AND PICOTEES.—Twelve cut blooms, distinct kinds, James Nugent,	3 00

Cut Flowers.—Display, filling 100 bottles, Mrs. A. D. Wood,	$4 00
Second, Mrs. E. M. Gill,	3 00
Third, Mrs. L. P. Weston,	2 00
Table Design.—Best arranged, Mrs. A. D. Wood,	3 00
Gratuities:—	
Francis B. Hayes, Roses and Clematis,	2 00
James Comley, Tea Roses,	2 00
Benjamin G. Smith, Carnations,	2 00
Hovey & Co., "	1 00
George Craft, Cut Flowers,	2 00
E. H. Hitchings, *Rhododendron maximum*,	2 00
Mrs. C. N. S. Horner, Native Flowers,	3 00

July 10.

Vase of Flowers.—Best arranged, James O'Brien,	5 00
Gratuities:—	
Francis B. Hayes, Roses and Clematis,	2 00
James Nugent, Roses and Hollyhocks,	1 00
Mrs. A. D. Wood, Cut Flowers,	2 00
Mrs. L. P. Weston, " "	2 00
Mrs. E. M. Gill, " "	1 00
James O'Brien, " "	1 00
George Craft, " "	1 00
James Comley, " "	1 00

July 17.

Hollyhocks.—Twelve blooms, of twelve distinct colors, E. Sheppard,	4 00
Second, George Craft,	3 00
Six blooms, of six distinct colors, John B. Moore,	2 00
Second, James Nugent,	1 00
Three blooms, of three distinct colors, Mrs. E. M. Gill,	1 00
Single spike, the second prize to James Nugent,	1 00
Cut Flowers.—Display, filling 100 bottles, Mrs. A. D. Wood,	4 00
Second, James O'Brien,	3 00
Third, Mrs. E. M. Gill,	2 00
Gratuities:—	
Francis B. Hayes, Roses, Clematis, etc.,	2 00
Miss E. M. Harris, Hollyhocks,	2 00
Mrs. E. M. Gill, "	1 00
E. Sheppard, " Lilies, etc.,	2 00
George Craft, " etc.,	1 00
" " Cut Flowers,	2 00
James Nugent, " "	1 00
John B. Moore, Roses,	2 00

JULY 24.

PERENNIAL PHLOXES.—Six named varieties, one spike each, John B. Moore, ... $3 00
Second, John B. Moore, ... 2 00
PELARGONIUMS.—Twelve double and single varieties, one truss each, the second prize to Mrs. E. M. Gill, ... 1 00

Gratuities: —

Francis B. Hayes, Roses, Clematis, Lilies, etc., ... 3 00
John B. Moore, Roses and Phloxes, ... 1 00
Woolson & Co., Passaic, N. J., Collection of Phloxes, ... 1 00
Hovey & Co., *Allamandas*, ... 1 00
Herbert Gleason, *Tritomas*, ... 1 00
E. S. L. Dolliver, Hollyhocks, ... 2 00
George Craft, Cut Flowers, ... 3 00
Mrs. E. M. Gill, " " 2 00
Mrs. L. P. Weston, " " 2 00

JULY 31.

BALSAMS.—Twelve spikes, not less than eight varieties, the second prize to John B. Moore, ... 1 00
CUT FLOWERS.—Display, filling 100 bottles, Mrs. E. M. Gill, . . 4 00
Second, Mrs. A. D. Wood, ... 3 00
Third, Mrs. L. P. Weston, ... 2 00
Collection of twenty-five named varieties of Annuals and Herbaceous Perennials, other than bulbus rooted, Mrs. E. S. Joyce, . 4 00

Gratuities: —

Francis B. Hayes, Hybrid Perpetual Roses, ... 5 00
" " " Dianthus, etc., ... 2 00
James Cartwright, Gladioli, ... 3 00
Hovey & Co., Lilies, ... 1 00
John B. Moore, Roses and Lilies, ... 1 00
Woolson & Co., Passaic, N. J., Herbaceous Plants, ... 1 00
James Nugent, *Daturas*, ... 1 00
E. H. Hitchings, Native Plants, ... 1 00
George Craft, Cut Flowers, ... 3 00
E. Sheppard, " " 2 00

AUGUST 7.

PERENNIAL PHLOXES.—Ten distinct named varieties, one spike each, John B. Moore, ... 4 00
Second, John B. Moore, ... 3 00
PETUNIAS.—Collection, filling fifty bottles, one flower in a bottle, George Craft, ... 3 00
Second, E. Sheppard, ... 2 00

VERBENAS.—Fifty bottles, single trusses, E. Sheppard, . . . $3 00
Second, James Nugent, ... 2 00
Third, George Craft, ... 1 00
CUT FLOWERS.—Display, filling 100 bottles, Mrs. A. D. Wood, . 4 00
Second, James Nugent, ... 3 00
Third, Mrs. E. M. Gill, ... 2 00
NATIVE FERNS.—Collection, Mrs. C. N. S. Horner, ... 3 00

Gratuities: —

Francis B. Hayes, Roses, Marigolds, etc., ... 3 00
James Cartwright, Gladioli, ... 3 00
John L. Gardner, *Achimenes*, ... 3 00
E. Sheppard, Phloxes, Verbenas, etc., ... 2 00
Benjamin G. Smith, Pinks, ... 1 00
George Craft, Cut Flowers, ... 3 00
Mrs. E. S. Joyce, " " 1 00
Mrs. C. N. S. Horner, Native Plants, ... 2 00

AUGUST 14.

GLADIOLI.—Display of named and unnamed varieties, filling 100 bottles, James Cartwright, ... 6 00
Second, George Craft, ... 4 00
Single spike, George Craft, ... 1 00
PHLOX DRUMMONDI.—Collection, Francis B. Hayes, . . . 3 00
Second, George Craft, ... 2 00
Third, Mrs. E. M. Gill, ... 1 00
CUT FLOWERS.—Collection of twenty-five named varieties of Annuals and Herbaceous Perennials, other than bulbous rooted, Francis B. Hayes, ... 4 00
Second, Hovey & Co., ... 3 00
Third, George Craft, ... 2 00

Gratuities: —

Francis B. Hayes, Hybrid Perpetual Roses, ... 3 00
James Nugent, *Brugmansia*, ... 1 00
J. W. Manning, Phloxes and Gladioli, ... 1 00
William H. Spooner, Tropæolums, ... 1 00
Mrs. L. P. Weston, Cut Flowers, ... 2 00
George Craft, " " 2 00
Mrs. A. D. Wood, " " 2 00
Mrs. E. M. Gill, " " 1 00
E. A. Story, " " 1 00
E. H. Hitchings, Native " 1 00

AUGUST 21.

ASTERS, LARGE FLOWERED.—Thirty flowers, not less than ten varieties, James Nugent, ... 4 00
Second, John L. Gardner, ... 3 00

Third, Mrs. A. D. Wood, ... $2 00
Fifteen flowers, not less than six varieties, Mrs. E. M. Gill, . 3 00
Pompons.—Sixty blooms, not less than six varieties, in bunches of three of the same variety, James Nugent, ... 3 00
Second, Mrs. A. D. Wood, ... 2 00
Display, filling 150 bottles, one flower in each, James Nugent, . 4 00

Gratuities: —

Francis B. Hayes, Hybrid Perpetual Roses, ... 2 00
James Cartwright, Gladioli, ... 2 00
George Craft, Gladioli, ... 2 00
" " Display of Flowers, ... 2 00
Mrs. A. D. Wood, Cut Flowers, ... 2 00
Mrs. E. M. Gill, " " 2 00
Mrs. L. P. Weston, " " 2 00
E. A. Story, " " 1 00
E. Sheppard, " " 1 00
Mrs. E. S. Joyce, " " 1 00

August 28.

Lilies.—Display of *Lilium lancifolium*, cut flowers, Hovey & Co., 3 00
Second, Francis B. Hayes, ... 2 00
Tropæolums.—Display, filling 25 bottles, William H. Spooner, . 3 00
Second, Charles F. Curtis, ... 2 00
Cut Flowers.—Display, filling 150 bottles, Mrs. E. M. Gill, . . 4 00
Second, George Craft, ... 3 00
Third, James Nugent, ... 2 00
Native Plants.—Display of named species and varieties, one bottle each, Mrs. C. N. S. Horner, ... 3 00

Gratuities: —

Hovey & Co., Lilies in pots, ... 2 00
Miss S. W. Story, Lilies, ... 1 00
Benjamin G. Smith, " 1 00
Mrs. E. S. Joyce, " 1 00
William H. Spooner, Collection of Tropæolums, ... 2 00
Francis B. Hayes, Hybrid Perpetual Roses, ... 2 00
Hovey & Co., Petunias, etc., ... 1 00
George Craft, Gladioli, ... 2 00
Mrs. E. S. Joyce, Asters, ... 1 00
C. W. Ross, Cut Flowers, ... 2 00
Mrs. L. P. Weston, " " 2 00
Herbert Gleason, " " 1 00

September 4.

Double Zinnias.—Twenty flowers, not less than six varieties, Francis B. Hayes, ... 4 00
Second, William H. Spooner, ... 3 00
Third, James Nugent, ... 2 00

Dianthus.—Annual and Biennial varieties,—collection filling fifty bottles, single trusses, Francis B. Hayes,	$4 00
Marigolds.—Collection, filling 25 bottles, single trusses, Francis B. Hayes,	3 00
Second, George Craft,	2 00
Clematis.—Summer blooming varieties, display of cut blooms, Francis B. Hayes,	5 00
Gratuities: —	
George Craft, Gladioli,	2 00
" " Asters,	1 00
Francis B. Hayes, Hybrid Perpetual Roses,	2 00
S. G. Stone, Dahlias,	2 00
Mrs. L. P. Weston, Cut Flowers,	2 00
James Nugent, " "	1 00
Mrs. E. M. Gill, " "	1 00
E. Sheppard, " "	1 00
Mrs. A. D. Wood, " "	1 00
Mrs. E. S. Joyce, " "	1 00

ANNUAL EXHIBITION.

September 14, 15, 16, and 17.

Greenhouse and Stove Plants. — Twelve of different varieties, Samuel R. Payson,	$30 00
Second, F. L. Ames,	25 00
Specimen Plant, not Variegated.—Of a kind for which no special prize is offered, Hovey & Co.,	5 00
Second, F. L. Ames,	4 00
Specimen Flowering Plant, H. H. Hunnewell,	5 00
Second, H. H. Hunnewell,	4 00
Variegated Leaved Plants. — Six varieties, not offered in the collection of greenhouse plants, William Gray, Jr.,	12 00
Specimen Plant, Variegated.—Not offered in any collection, Samuel R. Payson,	5 00
Second, John L. Gardner,	4 00
Caladiums.—Six varieties, William Gray, Jr.,	5 00
Second, Hovey & Co.,	4 00
Ferns.—Six named varieties, J. Warren Merrill,	8 00
Adiantums.—Six varieties, Samuel R. Payson,	6 00
Second, Hovey & Co.,	4 00
Dracænas.—Six named varieties, William Gray, Jr.,	8 00
Palm.—Single specimen, William Gray, Jr.,	5 00
Second, Hovey & Co.,	4 00
Nepenthes.—Three plants, named, F. L. Ames,	6 00

AGAVES.—Six distinct varieties, Henry Ross, ... $6 00
Second, Hovey & Co., ... 4 00
GLADIOLI.—Best display, and best kept during the exhibition, of named and unnamed varieties, filling 100 bottles, the second prize to George Craft, ... 6 00
DAHLIAS.—Twelve named varieties, John L. Gardner, ... 5 00
Second, Samuel G. Stone, ... 4 00
Third, James Nugent, ... 3 00
Six named varieties, John Parker, ... 3 00
Second, Samuel G. Stone, ... 2 00
Third, Samuel G. Stone, ... 1 00
Single named flower, Fancy or Self, James Nugent, ... 2 00
Second, John L. Gardner, ... 1 00
LILIPUTIAN DAHLIAS.—General display, filling fifty bottles, Samuel G. Stone, ... 4 00
CUT FLOWERS.—Best display, and best kept during the Exhibition, filling 150 bottles, Miss E. M. Gill, ... 16 00
Second, Mrs. A. D. Wood, ... 14 00
Third, James Nugent, ... 12 00
BASKET OF FLOWERS.—Best arranged, and best kept during the Exhibition, Miss S. W. Story, ... 5 00
TABLE DESIGN.—Best, and best kept through the Exhibition, not to exceed four feet in height, Mrs. E. S. Joyce, ... 5 00

Special Prize.

VASE OF FLOWERS.—Best arranged, and best kept during the Exhibition, Francis B. Hayes, ... 5 00

Gratuities: —

H. H. Hunnewell, Collection of Plants, ... 25 00
Hovey & Co., " " 10 00
Francis B. Hayes, " " 10 00
F. L. Ames, " " 5 00
" " " *Bertolonias*, ... 3 00
Benjamin Gray, *Nymphæas*, ... 10 00
John L. Gardner, two plants of *Dracæna terminalis*, . . . 2 00
Norton Brothers, Collection of Ferns, ... 7 00
J. Warren Merrill, Case " " 3 00
Albert Adams, Large Plant of Ivy, ... 2 00
S. G. Stone, Dahlias and Asters, ... 2 00
Macey Randall, Dahlias, ... 1 00
William H. Spooner, Collection of Tropæolums and Nasturtiums, . 3 00
Francis B. Hayes, Hybrid Perpetual Roses, ... 2 00
John B. Moore, " " " 1 00
Mrs. L. P. Weston, Cut Flowers, ... 6 00
George Craft, " " 1 00
Miss E. H. Craft, Design of Dried Flowers and Leaves, . . . 4 00
E. H. Hitchings, Collection of *Botrychium ternatum*, . . . 1 00

SEPTEMBER 25.

Gratuities : —

Francis B. Hayes, Roses, Clematis, etc.,	$2 00
Mrs. E. M. Gill, Cut Flowers,	1 00
S. G. Stone, Dahlias,	1 00
B. G. Smith, Asters,	1 00
E. H. Hitchings, *Botrychiums*,	1 00
Isaac Sprague, Oaks in variety,	1 00

OCTOBER 2.

DAHLIAS.—Twelve named varieties, John L. Gardner,	5 00
Second, Samuel G. Stone,	4 00
Third, Macey Randall,	3 00
Six named varieties, John L. Gardner,	3 00
Second, Macey Randall,	2 00
Third, Samuel G. Stone,	1 00
VASE OF FLOWERS.—Best arranged, Mrs. A. D. Wood,	4 00
Second, Mrs. E. M. Gill,	3 00

Gratuities : —

Francis B. Hayes, Hybrid Perpetual Roses,	2 00
Samuel G. Stone, Dahlias,	3 00
Macey Randall, "	1 00
James Nugent, " and Zinnias,	1 00
Mrs. A. D. Wood, Cut Flowers,	1 00
Miss S. W. Story, " "	1 00
George Craft, " "	1 00

OCTOBER 23.

Gratuity : —

Samuel G. Stone, Collection of Dahlias,	2 00

CHRYSANTHEMUM SHOW.

WEDNESDAY, NOVEMBER 10.

CHRYSANTHEMUMS.—Six Large Flowered, H. L. Higginson,	$8 00
Second, H. P. Walcott,	6 00
Six Pompons, H. L. Higginson,	8 00
Four Japanese, H. P. Walcott,	6 00
Second, H. P. Walcott,	4 00
Specimen Plant, Large Flowered, H. L. Higginson,	4 00
Second, H. P. Walcott,	3 00
Specimen Plant, Pompon, James Comley,	4 00
Second, H. L. Higginson,	3 00
Third, H. L. Higginson,	2 00

Specimen Plant, Liliputian, H. P. Walcott,	$2 00
Second, H. L. Higginson,	1 00
Specimen Plant, Japanese, H. P. Walcott,	4 00
Second, H. P. Walcott,	3 00
Twelve Large Flowered, cut specimens, H. P. Walcott,	3 00
Second, Francis B. Hayes,	2 00
Twelve Pompon Flowered, cut specimens, E. Sheppard,	3 00
Second, Joseph Clark,	2 00
General Display, named or unnamed, cut specimens, F. B. Hayes,	5 00
Second, E. Sheppard,	4 00
Third, Joseph Clark.	3 00
Orchids.—Three named varieties, F. L. Ames,	6 00
Second, F. L. Ames,	4 00
Single Plant, in bloom, F. L. Ames,	3 00
Second, F. L. Ames,	2 00
Hand Bouquets.—Pair, the second prize to Mrs. E. S. Joyce,	2 00
Table Design.—Best arranged, Mrs. A. D. Wood,	3 00
Second, Mrs. E. M. Gill,	2 00

Gratuities: —

Norton Brothers, Collection of Large Flowered Chrysanthemums,	5 00
" " " Pompon " "	5 00
James Comley, Chrysanthemums,	4 00
Mrs. A. D. Wood, Cut Specimens of Chrysanthemums,	2 00
Francis B. Hayes, " " " "	2 00
Mrs. E. M. Gill, " " " "	2 00
James Cartwright, Orchids, cut specimens,	3 00
R. Manning, Autumn Berries,	1 00
A. W. Nelson, two plants of *Epiphyllum truncatun*,	1 00
Benjamin Gray, *Nymphæa* flowers,	1 00
James Nugent, Cut Flowers,	3 00
Mrs. L. P. Weston, " "	2 00
Miss S. W. Story, " "	1 00

Silver Medals.

March 18. F. L. Ames, *Phalænopsis grandiflora aurea.*

June 5. Hovey & Co., Seedling *Epiphyllums.*

June 18. F. L. Ames, *Cypripedium Lawrencianum.*

" Francis B. Hayes, *Bougainvillea glabra.*

July 17. Mrs. C. N. S. Horner, Native Flowers.

August 7. Francis B. Hayes, *Agapanthus umbellatus.*

August 21. Francis B. Hayes, Beautiful Collection of Hybrid Perpetual Roses.

Annual Exhibition, September 14–17. F. L. Ames, Orchids.

November 10. F. L. Ames, *Cypripedium Spicerianum.*

FIRST CLASS CERTIFICATES OF MERIT.

January 3.	Joseph Tailby, Seedling Carnation No. 9.
February 21.	Francis B. Hayes, *Azalea mollis*, forced.
"	F. L. Harris, Hybrid Seedling Rose.
March 18.	Joseph Tailby, *Lycaste Skinneri delicatissima.*
"	Hovey & Co., Seedling Azaleas.
"	Peter Henderson, Rose Banner of America.
April 7.	William S. Ewell, New Coleus.
May 1.	John C. Hovey, *Narcissus bicolor* and varieties.
" 15.	Joseph Tailby, Seedling Carnation Fred Johnson No. 90.
" 29.	Francis Parkman, Seedling Clematis.
June 5.	Joseph Tailby, Seedling Carnation Princess Louise.
" 18.	" " " " Mrs. H. M. Priest.
"	Woolson & Co., Seedlings from *Iris Kæmpferi.*
" 26.	John C. Hovey, Seedling *Opuntias* in variety.
July 31.	John B. Moore, Seedling Phlox.
"	James Cartwright, Seedling Gladiolus No. 84.
" 24.	Francis B. Hayes, *Lilium Kahamii.*
August 21.	" " " Paul Neron Roses.
Annual Exhibition, September 14–17.	Hovey & Co., *Echeverias.*
" "	Francis B. Hayes, *Cupania filicifolia.*
" "	H. H. Hunnewell, *Terminalia elegans.*
" "	Charles H. Hovey, *Echeveria Hoveyii.*

PROSPECTIVE PRIZE.

Joseph Tailby, Carnation Grace Wilder, ...	$40 00

REPORT

OF THE

COMMITTEE ON FRUITS,

FOR THE YEAR 1880.

By JOHN B. MOORE, CHAIRMAN.

The Committee on Fruits submit the following report for the year 1880:

This year has been somewhat peculiar in its characteristics, not only from its remarkable earliness, but also from its long-continued periods of heat and dryness, which injured some species of fruit and favorably affected others.

The first fruit of the season, to which our attention was called, was the STRAWBERRY. This is so palatable and healthful, and matures at a time when there is a scarcity of other fruits, and is really so easy to cultivate, that there is no good reason why it should not be more generally grown in all gardens, large or small.

The prize day for strawberries named in the Schedule was found to be too late, owing to the extreme earliness of the season, and was changed by the Committee to an earlier day. The fruit was injured by the dry weather, and was not shown in as great perfection as in some previous seasons; still there was a good exhibition, taking all the circumstances into consideration. Seedling strawberries were exhibited by D. L. Milliken, E. P. Richardson, and others; also eight varieties of French strawberries, by Hovey & Co. A description of these, and of other new fruits that have not been heretofore described, and that appeared desirable, will be found annexed.

CHERRIES. — The dry weather at the time of ripening was so favorable that the mature fruit has been quite free from rot, and it

has been shown in fair quantities, although there have not been as many individual competitors as usual for the prizes. About the only new variety was Warren Fenno's Norfolk, a seedling which he has heretofore exhibited, and which has already been described.

Currants exhibited this year have been very fine. The first prizes for red, white, and black, on each day, were awarded to the following varieties: Red, La Versaillaise; White, Dana's New White Transparent; Black, Black Naples. These varieties have become recognized as the leading kinds of each color to grow. There are other varieties, claimed to be later, and which may prove to be useful.

Raspberries were injured the previous autumn or winter, and there was neither the usual quantity nor as fine specimens as we have had on our tables in former years. William C. Strong exhibited the new Black Cap raspberry, Gregg, which was large and fine. This was the only new variety of any merit.

Blackberries.—All the prizes for this fruit have been awarded to the Dorchester, which is large and of fine quality, but the canes are a little tender and liable to winter-kill in exposed situations. No new varieties have been brought to the attention of the Committee.

Gooseberries have been exhibited in about the usual quantities, with perhaps a better show of the foreign varieties, some of which were of fine quality. The interest in the cultivation of this fruit does not appear to increase, neither does the demand for the fruit itself in the market.

Plums.—Last year we noticed an increase in the number of dishes and varieties of this fine fruit, and we are able to make the same report the present year. It is evident that good crops can be secured by proper care in preventing the disease called black wart (which we think can be done without much trouble), and by jarring the trees to shake off the curculios on something from which they can be gathered and destroyed. Perhaps the latter object could be accomplished more easily by planting the trees in a hen-yard, and encouraging the fowls to convert the curculio into poultry. By such treatment we are confident that a good crop of plums could be secured. The plum is a fine, luscious fruit, and is well worthy of our attention.

Peaches have been very fine this season, and have been presented in fair quantities. The leading varieties exhibited have

been Crawford's Early, Crawford's Late, and Stump the World. A number of new seedling peaches were shown, some of which may prove good. Mrs. Brett, a variety sent by J. H. Ricketts, of Newburgh, N. Y., was of fine quality.

Grapes.—The foreign varieties have been exhibited during the season in the usual quantities. Some of them were fine, but as a whole there was no marked improvement over previous years. The long dry season of the present year has been particularly favorable to what are termed native or hardy grapes. The word hardy is, however, applied to many only half-hardy varieties. There has been but little mildew, and varieties particularly liable to be injured by it have escaped, and matured a good crop of fruit. Such seasons, free from mildew, afford the natural conditions of weather to mature a good crop of grapes. These conditions existed in an unusual degree the present year, and the result has been that we have had much finer specimens and in greater abundance than is usual on our tables. We have also had a number of new seedlings exhibited this year for the first time.

At the Annual Exhibition we awarded First Class Certificates of Merit to the exhibitors of the Smith's Seedling, Niagara, Jefferson, and Hayes; and on the second day of October the same, for the Pocklington and Norwood. On the same day, Horace Eaton presented Eaton's Seedling. The bunches were very large, handsome, and good, maintaining its reputation of last year. We have now entered, for the prospective prize for grapes, the Niagara, Smith's Seedling, Hayes, Seward, D'Elboux Seedling, and Amber Queen. In addition to the above, the Prentiss and Duchess, both promising white grapes, have been shown. And last, but not least, comes our long esteemed friend, ex-President Wilder, as enthusiastic as in his younger days, with a new seedling of royal blood, a white grape of fine quality, a cross or hybrid between the Massasoit and Queen of Nice.

Pears.—Although there has been a small crop of this fruit the present year, yet we have had good exhibitions and specimens—some of the latter quite large. George S. Harwood's Sheldons, the dozen weighing twelve pounds; C. F. Curtis's dish of the same variety, twelve pounds five ounces; Beurre Clairgeau, from Mr. Curtis, twelve pounds ten ounces; and the same variety from Mrs. Langmaid, twelve pounds two and three-fourths ounces, were prominent among them, and very fine specimens. Many

other varieties have been shown, in nearly equal perfection. On the whole, the exhibition of pears has been somewhat less in quantity than usual, but quite satisfactory in quality. Two or three new seedlings have been shown, and are described among the new fruits.

Apples.—The year 1880 will be long remembered as a great apple year—as a year when they were so plenty that they wasted and decayed in great quantities under the trees and by the road-sides—when they were so abundant as to but little more than pay for the picking, packing, and transportation to market. Although they were so plenty, the specimens have been very large, fair, and handsome. The result of this has been that we have had numerous and fine specimens of this, the most important of all our fruits, placed on our tables. The apple, in the uses and economy of the household, is the standard fruit of this section of our country, and when as plenty as it has been this year, is a blessing to the poor, for any one could have a bushel or a barrel of apples for simply gathering them.

Next year, probably, there will be only a small crop of poor, wormy apples; wormy because these little pests in the apples have been able to go through their transformations without much disturbance, and are now quietly perfecting themselves in the ground for next year's campaign, whereas if they had been ground up and made into cider they would not have committed any further ravages. As a means of destroying insects the making of cider is a great invention. As a drink the article is not, by any means, pure juice of the apple alone. A method that would produce uniform crops of apples every year would confer untold benefits on the fruit grower.

On the 20th of November a collection of apples was exhibited from the Armada (Michigan) Agricultural Society, comprising the following varieties: Tompkins County King, Esopus Spitzenberg, Pound Sweet, Yellow Bellflower, Northern Spy, Talman's Sweet, Chillicothe Sweet, Peck's Pleasant, Roxbury Russet, Fallawater, Rhode Island Greening, and Baldwin. The first four varieties were remarkably fine. The Northern Spy was very large, and all the others were good. In the earlier days of the Society such exhibitions, under the auspices of the Committee on Synonymes of Fruit, were more common than now, and, though the object then aimed at, viz., the establishment of the nomenclature of fruits, is

now substantially accomplished, the Committee were much gratified to have an opportunity to examine fruits grown under circumstances of soil and climate different from our own.

We are under obligations to Robert Manning, Secretary, who is an expert, for making descriptions for the Committee, of new seedlings and other new fruits that appeared promising. These have been adopted by the Committee, annexed, and made a part of this report.

The amount appropriated for prizes for fruits was $950.00. The Committee have awarded in prizes and gratuities $854.00, leaving an unexpended balance of $96.00. The Committee have, for the last three years, reported an unexpended balance of the appropriation; not that it was not needed, but that it was the duty of the Committee to keep within the amount allowed them. The fact is precisely this, that the prizes should be more numerous, and some of them should be larger to secure such competition as would be desirable. We make this explanation in answer to the remark that has been made, that the committees do not spend all the money appropriated, and therefore do not need any more.

Respectfully submitted,

JOHN B. MOORE,
P. B. HOVEY,
E. W. WOOD,
JACOB W. MANNING,
O. B. HADWEN,
WARREN FENNO,

Fruit Committee.

NOTES ON NEW FRUITS.

By Robert Manning, Secretary.

Strawberries. *Seedling.*—From D. L. Milliken, June 5. Large, conical, sometimes wedge-shaped, tolerably regular; crimson toward the sun, bright and glossy. Flesh solid, orange scarlet, juicy, not so high-flavored as some; will rank as "good." From seed of the Seth Boyden, and free from the objectionable point of its parent in not ripening at the tip. It may prove desirable for its earliness.

Seedling.—From E. P. Richardson. Full medium size; rounded, slightly conical, regular; color bright and glossy; flesh light red, solid, juicy, with a peculiar but not pleasant flavor. From seed of La Constante.

Seedling.—From the same grower. Pretty large; regular, conical; bright, glossy color; flesh white, core large; juicy, very spirited. A cross between the Fillmore and Kentucky.

The eight varieties, next described, are of French origin, and were exhibited by Hovey & Co., June 26.

Chatelaine.—Medium size; very long oval, with a neck; crimson when fully ripe; flesh light red, with a large hollow core; not very juicy. The flavor resembles that of the Wood strawberries. It was thought by the Committee to be the best of the eight.

David. — Above medium size; conical, irregular, sometimes cockscombed; deep crimson; flesh red, with little core, juicy, having a brisk acid, but pleasant and refreshing.

Dr. Morère.—Large; mostly regular conical; good, bright color; flesh red, core large and hollow; juicy, with a peculiar flavor; will rank as "very good."

Rose.—Large; very long conical; light red — not of desirable color; flesh white, core pretty large; juicy, with a pleasant acid, and flavor resembling the Hautbois.

Lucie Flament.—Large; long conical, irregular; flesh tinged with red, core pretty large; rather harsh acid. Inferior to either of the preceding.

Ceres.—Large; irregular, much cockscombed; dark purplish red, resembling the Black strawberries; flesh red, solid, melting; brisk acid, but rich.

Pulchra.—Pretty large; roundish conical, but irregular; rather light red; flesh light red, core large; juicy; will not rank above "good."

Flora.—Medium size; crimson; pretty regular conical; not much core; juicy, acid harsh and astringent; the poorest of the eight.

The specimens of Sharpless shown by George Hill, on the 12th of June, and Warren Henstis on the 18th, were very large and handsome.

On the 19th of June, G. H. and J. H. Hale, of South Glastonbury, Conn., presented four new strawberries: the Glendale, Hart's Minnesota Seedling, Marvin, and Windsor Chief. The last three of these had never been shown here before. Though it was impossible to judge of their value we were gratified that the Messrs. Hale had taken the trouble to place them before the Society.

Apples. *Jacobs's Sweet.*—Originated at Medford, by Charles S. Jacobs. The tree sprang from seed about 1860, and fruited when about ten years old. Large, roundish, flattened, regular; yellow, with a handsome red cheek. A fall and early winter apple; excellent for baking, or for eating raw by those who like sweet apples. The specimens were exhibited by Franklin Patch, of Lexington, who stated that the tree is a vigorous grower.

Chilicothe Sweet.—Received from the Armada (Michigan) Agricultural Society, November 22. Large, roundish, somewhat conical; slightly irregular, and decidedly ribbed; yellow, nearly covered with streaks of red, which, on the sunny side, form a dense red cheek, spotted with rather obscure yellowish dots, and having traces of bloom which give it a purplish look. Flesh white, fine grained, sweet, not very juicy or rich, but pleasant, with a peculiar flavor. Season, November to January, or later. We have not found this variety described in any pomological work, and its origin is unknown.

Pears. *President Clark.*—From J. W. Talbot, September 16. Full medium size; turbinate, somewhat irregular and variable, some specimens approaching Doyenne shape; in general appearance strongly resembling the Kingessing, but having a brighter red cheek. When in perfection, clear lemon yellow. The best speci-

mens have a carmine cheek next the sun; flesh white, fine grained, very melting and juicy, slightly astringent, sweet and rich. "Very good" to "best." Season a little later than the Bartlett. Tree a very vigorous grower, with abundant foliage. A seedling, raised by the late Francis Dana.

Seedling No. 1.—From D. W. Lothrop, September 16. Full medium size; form between obovate obtuse pyriform and oblong obovate pyriform; skin smooth, pale yellow, with many irregular patches of russet, especially around the eye, sometimes taking a rich orange tint; flesh white, fine grained, buttery, very juicy, very rich. "Very good" to "best." It is a seedling from the Marie Louise, which it resembles in flavor. It was first exhibited in 1874, and is mentioned in the Report of the Fruit Committee for that year as of good quality.

Talmadge.—From Amos Bates, September 25. Small; between globular obtuse pyriform and obovate obtuse pyriform. Skin wholly covered with golden russet, which is thinnest on the blossom end, and in the sun assumes a warm orange tint; flesh juicy, buttery, and rich, with a decided quince flavor. Too small for market, but worthy the attention of amateurs.

Peach. *Mrs. Brett.*—Seedling, from J. H. Ricketts, of Newburgh, N.Y., September 16. Size, full medium, or large; rounded, a little conical, suture well defined; skin with little down; creamy white, in the sun purplish red, shading off in streaks and stipplings; flesh creamy white, juicy, with a brisk, sprightly flavor. Of excellent quality. Parts very freely from the stone.

Grapes. *D'Elboux Seedling.*—From seed of Telegraph, fertilized by Black Hamburg pollen. Bunch handsome, six and one-half inches in length. One of the two shown had a small shoulder. Berry large, round, black, with blue bloom; skin exceedingly thick and leathery. It has considerable pulp, which, however, is not tough, but allows the seed to separate easily. Sweet, juicy, and rich; entirely free from any foxy odor; flavor good, but difficult to define; holds on to the bunch well to the last. Originated by C. J. Copley, of Stapleton, Richmond County, N. Y., who states that the vine is healthy, hardy, a very strong grower, and productive; that the fruit ripens before the Hartford Prolific, and will keep until hard frost. It has fruited four years. Mr. Copley has entered it for the Prospective Prize.

Mineola.—Another of Mr. Copley's seedlings; from Telegraph,

fertilized by Chasselas Musqué. Bunch medium size; berry rather small, round, white, very sweet and rich, with aromatic flavor.

Cornelia.—Also from Mr. Copley; Telegraph seed, Chasselas Musqué pollen. Bunch small, not shouldered; compact, but not so much so as to prevent the full development of every berry; berries small, round, white, with an amber tint and a thin bloom; sweet and juicy, with a delicate but not high flavor; skin thick; holds on to the bunch well.

Clifton.—Also from Mr. Copley; Telegraph seed, White Frontignan pollen. Bunch six inches in length by five in width, very compact, largely shouldered; berries round, except when compressed by crowding; white, with an amber tint; juicy, rich, very sweet; pulp tough, skin thick and tough; holds on to the bunch well; no Frontignan flavor.

Roslyn.—Also from Mr. Copley; Diana seed, Hartford Prolific pollen. Bunch of good size, five inches long, shouldered, very compact; berry pretty large round, where not too much crowded—some are very much compressed; color variable, the largest berries being purplish, and others bronzy green with thin bloom; pulp pretty firm; sweet, with a strong musky flavor; skin thick; holds on to the bunch very strongly.

White Delaware.—Another of Mr. Copley's seedlings. Bunch small, exceedingly compact, more so than any other variety that we recollect; berries very small, round (except as compressed by close packing in the bunch), green, with an amber tint in the sun, and thin bloom; skin very thick; sweet, with not much pulp, but what there is is pretty hard; no dropping from the bunch.

Elvira.—Raised by J. Rommell, of Morrison, Mo., from seed of Taylor, fertilized with pollen of Martha. Exhibited by Mr. Copley. This is, by the female parent, of the *riparia* or *cordifolia* species, of which Professor Husmann has great hopes as giving varieties free from the rot, which has been so destructive in the West. Bunch hardly of medium size, shouldered, not very compact; berry hardly of medium size, round, pale green, with white bloom, sometimes amber colored; skin very thin; pulp firm but not tough; not very juicy, sweet, with a pleasant but not high flavor. Though the berries were not very crowded many of them were cracked open.

Excelsior.—A seedling from J. H. Ricketts, of Newburgh, N. Y. Bunch handsome, berry large, round, of a delicate bronzy red color; flesh tender, melting, and juicy, with scarcely any hardness

of pulp; sweet and rich, with a musky flavor resembling that of the Muscat Hamburg.

Lady Washington.—Another seedling from Mr. Ricketts. Bunch large, shouldered, very handsome; berry of medium or large size, round; color unique—not white, but rather "ecru"—in the sun tinged with light reddish brown or lilac, and everywhere covered with a waxy bloom; skin moderately thick; pulp tender without being "meaty," very sweet, rich, spirited, and high-flavored. The berries dropped freely from the bunches, but this may have been caused by their being over-ripe.

Jefferson.—Another seedling from Mr. Ricketts, a cross between the Iona and Concord. Bunch medium size, compact, but not too much so; berry slightly oval, in color resembling the Catawba, but hardly as dark as a well-ripened Catawba; skin thick; pulp firm and "meaty;" the flavor strongly resembles that of the Catawba; holds on to the bunch remarkably well. The specimens exhibited were raised by J. G. Burrow, of Fishkill, N. Y.

Naomi.—Another of Mr. Ricketts' seedlings; exhibited by Mr. Burrow. Bunch long (seven and a half inches), slender, shouldered, of medium compactness; berry of medium size, round; color varying from pale green to lilac; very sweet and rich, with a strong musky flavor; juicy, pulp dissolves in the mouth; skin pretty thick; berry holds on to the bunch well.

Bacchus.—Another seedling from Mr. Ricketts. Bunch about six inches long, slender, rather loose, shouldered; berry small, round, black, with blue bloom; little pulp; sweet, vinous and rich.

No. 97.—Another seedling from Mr. Ricketts. Bunch large, loose, shouldered, in general appearance resembling a well-ripened bunch of Black Hamburg; berry large, round, black, with blue bloom; pulp dissolves in the mouth; juicy and very spirited—too much so for the majority of tastes; skin thick; holds on to the bunch well.

Early August.—A seedling from John Pocklington, Sandy Hill, Washington County, N. Y. Largest bunch, six and one-half inches in length, shouldered, rather loose; berry of medium size, round, pale green, with white bloom, seldom showing any amber tint; skin thin; holds on to the bunch well; juicy and spirited, but thought by the Committee not to be quite ripe.

Pocklington.—From the same source as the above, October 2. Bunch large, sometimes shouldered, moderately compact; berries

very large, round, pale green, with thin bloom, frequently amber-colored; skin of medium thickness; sweet and good, but has considerable hard pulp and foxy odor, which is not unpleasantly perceptible to the taste; seeds very large.

Seedling.—From Marshall P. Wilder; a cross between the Massasoit and Queen of Nice, and consequently of three-quarters foreign blood. Bunch of medium size, rather slender; the largest measured about six inches in length; generally shouldered, rather loose; berry below medium size, round, pale green, with a light bloom, inclining to amber when most exposed to the sun; skin pretty thick; pulp very slight, juicy and sweet; quality "very good;" resembles Allen's Hybrid.

Seedling.—From Vivus W. Smith, Syracuse, N. Y. The bunches sent varied in size, the largest being five and a half inches long, not much shouldered, rather loose and irregular; berries from medium to large size, round, pale green, with thin bloom; skin of moderate thickness; holds on to the bunch well; pulp tender, juicy, sweet, and spirited; acid within. It has a fragrance like that of a ripe pear. This was deemed one of the best in quality of the new grapes submitted to the examination of the Committee. It was entered for the Prospective Prize.

Seward.—A seedling from S. V. Smith, Syracuse, N. Y. Bunch of moderate side, say four inches in length. About half those sent had shoulders. Compact, but not much crowded; berry medium to large, round; skin of moderate thickness, in color like the Catawba, or a shade darker; pulp easily bitten through; sweet, juicy, and rich. It has a fragrance resembling that of a ripe pear, like the preceding, but less strong. The berries shake off very badly. Entered for the Prospective Prize.

Montgomery.—Exhibited by J. G. Burrow, of Fishkill, N. Y. Origin not given, but, judging from the appearance, it is largely or wholly foreign. Mr. Burrow states that it is raised by the ton in Dutchess County, though it requires more care than the native varieties. Bunch, seven inches or more in length; compact, shouldered; berry round, green, with a thin bloom, "meaty," not high-flavored.

Duchess was exhibited by R. G. Chase & Co., of Geneva, N. Y., but the specimens were removed before there was time to make a description of them. It is a white grape, with a very "meaty" pulp, from a white seedling of the Concord crossed with Walter.

The mother was from a cross between the Concord and Montgomery.

Niagara.—A plentiful supply of this variety was sent by the Niagara Grape Company, but we see nothing to change in the description made last year. It was originated by Claudius L. Hoag and Benjamin W. Clark, of Lockport, N. Y., and is entered by them for the Prospective Prize.

Prentiss.—This was again exhibited, by T. S. Hubbard, of Fredonia, N. Y. Some of the bunches were larger than those shown last year, and pretty well up to medium size. It is of fine quality and has the characteristics of a good keeper.

All the above-named grapes were shown at the Annual Exhibition, except the Pocklington.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

JANUARY 3.

Gratuity : —

A. S. McIntosh, Glout Morceau Pears, ... $1 00

AZALEA AND ROSE EXHIBITION.

MARCH 18.

WINTER PEARS.—Any variety, Warren Fenno, Easter Beurre, . $3 00
Second, Warren Fenno, Josephine de Malines, ... 2 00
WINTER APPLES.—Any variety, Joseph G. Coolidge, Baldwin, . 3 00
Second, William T. Hall, Northern Spy, ... 2 00

Gratuities : —

C. E. Grant, Catillac Pears, ... 1 00
B. G. Smith, Pound Pears, ... 1 00
Robert Manning, Bergamot Parthenay Pears, ... 1 00
Samuel Hartwell, Apples, ... 1 00

MARCH 27.

Gratuity : —

Lemuel Clapp, Seedling Pear, No. 64, ... 1 00

JUNE 5.

Gratuities : —

Leonard W. Weston, Crescent Seedling Strawberries, . . . 1 00
D. L. Milliken, Seedling Strawberries, ... 1 00

JUNE 12.

Gratuities : —

George Hill, Collection of Strawberries, ... 3 00
C. E. Grant, " " 1 00
Charles Garfield, " " 1 00
Aaron D. Capen, Charles Downing Strawberries, ... 1 00
John B. Moore, Hervey Davis, " 1 00

ROSE SHOW.

JUNE 18.

EARLY STRAWBERRIES.—Four quarts, Hovey & Co., Hovey's Seedling, $5 00
Second, B. G. Smith, Sharpless, ... 4 00
Third, John B. Moore, Great American, ... 3 00
FORCED GRAPES.—Three varieties, Cephas H. Brackett, . . . 7 00
Two bunches of one variety, Cephas H. Brackett, ... 4 00

STRAWBERRY SHOW.

CHANGED FROM JUNE 28, TO JUNE 18.

STRAWBERRIES.—For the best four quarts of Caroline, John B. Moore,	$4 00
Cumberland Triumph, John B. Moore,	4 00
Hervey Davis, " " "	4 00
Sharpless, Warren Heustis,	4 00
For the best two quarts of Caroline, the second prize to C. E. Grant,	1 00
Centennial Favorite, the second prize to John B. Moore,	1 00
Charles Downing, Warren Heustis,	2 00
Second, John B. Moore,	1 00
Cinderella, John B. Moore,	2 00
Col. Cheney, Warren Heustis,	2 00
Crescent Seedling, the second prize to John B. Moore,	1 00
Duchess, John B. Moore,	2 00
Miner's Great Prolific, John B. Moore,	2 00
Monarch of the West, " " "	2 00
Second, M. W. Chadbourne,	1 00
Prouty's Seedling, John B. Moore,	2 00
Sharpless, " " "	2 00
Wilson's Albany, " " "	2 00
Collection, of not less than ten varieties, John B. Moore (17 varieties),	8 00
Fifty berries, of any variety, Warren Heustis,	3 00
CHERRIES.—Two quarts, of any variety, I. P. Langworthy, Knight's Early Black,	2 00
Second, C. E. Grant, Black Heart,	1 00
FOREIGN GRAPES.—Two bunches of any variety, Cephas H. Brackett, Black Hamburg,	3 00
Second, Cephas H. Brackett, Red Frontignan,	2 00
Gratuities: —	
C. E. Grant, Strawberries and Cherries,	1 00
Aaron D. Capen. " "	1 00
M. W. Chadbourne, Strawberries,	1 00
Francis B. Hayes, Figs,	1 00

JUNE 26.

Gratuities: —	
Hovey & Co., eight varieties of French Strawberries,	2 00
E. P. Richardson, two " " Seedling "	1 00
C. E. Grant, six varieties of Cherries,	3 00
C. N. Brackett, "	1 00
Thomas S. Lockwood, "	1 00

JULY 3.

CHERRIES. — Two quarts Black Tartarian, C. E. Grant,	2 00
Second, James Nugent,	1 00

Black Eagle, C. E. Grant,	$2 00
Second, James Nugent,	1 00
Downer's Late, C. E. Grant,	2 00
Second, James Nugent,	1 00
Any other variety, C. E. Grant, Napoleon Bigarreau,	2 00
Second, Warren Fenno, Norfolk,	1 00

Gratuities: —

B. G. Smith, Currants and Raspberries,	2 00
E. W. Wood, "	1 00

JULY 10.

RASPBERRIES.—Two quarts of any variety, Aaron D. Capen, Franconia,	2 00
Second, William Doran & Son,	1 00
CURRANTS.—Four quarts of a red variety, Lemuel Clapp, Versaillaise,	3 00
Second, B. G. Smith,	2 00
Third, E. W. Wood,	1 00
Four quarts of a white variety, John B. Moore, for Dana's White,	3 00
Second, B. G. Smith, French Transparent,	2 00

Gratuities: —

M. W. Chadbourne, Currants,	1 00
C. E. Grant, "	1 00
C. F. Curtis, "	1 00
Warren Heustis, "	1 00
George Craft, "	1 00
Mrs. E. M. Gill, "	1 00
William C. Strong, Gregg Raspberries (Black Cap),	2 00
C. N. Brackett, Cherries,	1 00
Warren Fenno, "	1 00

JULY 17.

RASPBERRIES.—Two quarts of any variety, Mrs. L. P. Weston, Herstine,	2 00
Second, Warren Fenno, Saunders,	1 00
CURRANTS.—Two quarts Dana's Transparent, John B. Moore,	2 00
Second, B. G. Smith,	1 00
Versaillaise, B. G. Smith,	2 00
Second, Warren Fenno,	1 00
Victoria, B. G. Smith,	2 00
Black Naples, Robert Manning,	2 00
Second, B. G. Smith,	1 00
BLACKBERRIES.—Two quarts of any variety, A. S. McIntosh, Dorchester,	2 00
Second, James Nugent,	1 00

Gratuities: —

J. C. Hobbs, Black Hamburg Grapes,	$3 00
Warren Fenno, Currants and Gooseberries,	1 00

JULY 24.

GOOSEBERRIES.—Two quarts of any variety, B. G. Smith, Wellington's Glory,	2 00
Second, Horace Eaton, Downing,	1 00
BLACKBERRIES.—Two quarts of any variety, A. S. McIntosh, Dorchester,	2 00
Second, James Nugent,	1 00
PEARS.—Doyenne d' été, Warren Fenno,	2 00
Second, B. G. Smith,	1 00

Gratuities: —

Warren Fenno, Gooseberries,	1 00
Alexander Dickinson, Peaches,	1 00
Frederick R. Shattuck, Apricots,	1 00
Warren Heustis, Pears,	1 00
Aaron D. Capen, Apples,	1 00
E. W. Wood, "	1 00
B. G. Smith, Gooseberries, Apples, and Pears,	2 00

JULY 31.

PEARS.—Any variety, John McClure, Beurre Giffard,	2 00
Second, Charles Bird,	1 00
GOOSEBERRIES.—Two quarts Foreign, B. G. Smith, Bang-Up,	2 00
Second, B. G. Smith, Whitesmith,	1 00
APRICOTS.—Any variety, Moses Darling, Jr., Moorpark,	2 00
Second, Frederick R. Shuttuck,	1 00

Gratuities: —

Samuel Hartwell, Apples,	1 00
Warren Heustis, "	1 00
C. N. Brackett. " and Pears,	2 00
Warren Fenno, " "	1 00
Horace Eaton, " and Peaches,	3 00
Francis B. Hayes, " and Figs,	2 00
William E. Coffin, Peaches,	1 00

AUGUST 7.

PEARS.—Beurre Giffard, William S. Janvrin,	2 00
Second, Warren Fenno,	1 00
EARLY APPLES.—Early Harvest, Warren Fenno,	2 00
Large Yellow Bough, Warren Heustis,	2 00
Second, C. Terry,	1 00
Red Astrachan, J. H. Woodford,	2 00

Second, Samuel Hartwell,	$1 00
Williams, " "	2 00
Second, B. G. Smith,	1 00
Any other variety, C. N. Brackett, Early Margaret,	2 00
Second, Warren Fenno, Tetofsky,	1 00

Gratuities :—

Aaron D. Capen, Collection of Apples,	1 00
Seth Weston, Apples,	1 00
C. N. Brackett, "	1 00
Warren Fenno, Collection of Apples and Pears,	2 00
B. G. Smith, Peaches and Apples,	1 00
Samuel Hartwell, Peaches,	1 00

AUGUST 14.

PEARS.—Clapp's Favorite, Warren Heustis,	2 00
Second, Horace Eaton,	1 00
Any other variety, George Frost, Suprême de Quimper,	2 00
Second, Francis B. Hayes, Pinneo,	1 00

Gratuities :—

B. G. Smith, Apples,	1 00
Warren Heustis, "	1 00
Samuel Hartwell, "	1 00
John Cummings, Williams Apples,	1 00
Aaron D. Capen, Sparhawk Apples,	1 00
Francis B. Hayes, Apples and Pears,	1 00
C. N. Brackett, " "	1 00
M. W. Chadbourne, Pears and Peaches,	1 00
Warren Fenno, Pears, Peaches, and Plums,	2 00
Mrs. H. V. Draper, Collection of Plums,	1 00

AUGUST 21.

PEARS.—Bartlett, John McClure,	2 00
Second, C. N. Brackett,	1 00
Rostiezer, the second prize to Warren Fenno,	1 00
Tyson, A. S. McIntosh,	2 00
Second, Warren Fenno,	1 00
PLUMS.—Any variety, Thomas S. Lockwood, Lawrence,	2 00
Second, Daniel Tucker, Bradshaw,	1 00
PEACHES —Any variety, John B. Moore, Crawford's Early,	2 00
Second, Warren Fenno, Hale's Early,	1 00

Gratuities :—

Horace Partridge, Grapes,	1 00
B. G. Smith, "	1 00
C. E. Grant, "	1 00
John B. Moore, "	1 00

Edwin A. Hall, Plums,	$1 00
Amos Bates, "	1 00
A. M. Davenport, Hale's Early Peaches,	1 00
Francis B. Hayes, Peaches and Figs,	1 00
O. B. Hadwen, Apples,	1 00
John Cummings, "	1 00
Samuel Hartwell, "	1 00
Aaron D. Capen, "	1 00
C. N. Brackett, Sparhawk Apples,	1 00
Francis B. Hayes, Pinneo Pears,	1 00

AUGUST 28.

APPLES.—Any variety, Samuel Hartwell, Gravenstein,	2 00
Second, L. W. Weston, Foundling,	1 00
PEARS.—Bartlett, C. N. Brackett,	2 00
Second, Warren Fenno,	1 00
Any other variety, C. N. Brackett, Doyenne Boussock,	2 00
Second, Warren Fenno, Andrews,	1 00
PLUMS.—Collection of not less than four varieties, Horace Eaton,	3 00
Any one variety, Thomas S. Lockwood, Lawrence's Favorite,	2 00
PEACHES.—Collection of not less than four varieties, Francis B. Hayes,	3 00
NATIVE GRAPES.—Six bunches of any early variety, J. W. Talbot, Delaware,	2 00
Second, J. W. Talbot, Cottage,	1 00

Gratuities:—

O. B. Hadwen, Apples,	1 00
John Cummings, "	1 00
Samuel Hartwell, "	1 00
John Cummings, Pears,	1 00
Howard Gannett, " and Peaches,	2 00
Mrs. W. Emery, Plums,	1 00
John C. Hovey, "	1 00
George W. Stevens, Peaches,	1 00
A. M. Davenport, "	1 00
Samuel Hartwell, "	1 00
John B. Moore "	1 00
Warren Fenno, Nectarines,	1 00

SEPTEMBER 4.

APPLES.—Foundling, L. W. Weston,	2 00
Second, Samuel Hartwell,	1 00
Gravenstein, Josiah Crosby,	2 00
Second, Samuel Hartwell,	1 00
Porter, John Cummings,	2 00
Second, Samuel Hartwell,	1 00

Any other variety, C. N. Brackett, Red and Green Sweet,	$2 00
Second, John Cummings, Garden Royal,	1 00
PEARS.—Andrews, Benjamin F. Hunt,	2 00
Second, Horace Partridge,	1 00
Doyenne Boussock, C. N. Brackett,	2 00
Second, E. W. Wood,	1 00
Any other variety, Horace Partridge, Flemish Beauty,	2 00
Second, Warren Fenno, " "	1 00
NATIVE GRAPES.—Six bunches of Delaware, Joseph S. Chase,	2 00
Second, Horace Eaton,	1 00
Hartford Prolific, Augustus Torrey,	2 00
Second, M. Darling, Jr.,	1 00
Moore's Early, John B. Moore,	2 00
Any other variety, Horace Eaton, Creveling,	2 00
Second, N. B. White, Norfolk Muscat,	1 00
PEACHES.—Any variety, John B. Moore, Crawford's Early,	2 00
Second, Samuel Hartwell, " "	1 00

Gratuities:—

A. D. Capen, Pears and Apples,	1 00
Howard Gannett, Pears and Peaches,	1 00
Charles Garfield, Grapes,	1 00
John L. Gardner, Peaches,	1 00
Francis Payer, "	1 00
E. W. Capen, "	1 00
M. W. Chadbourne, "	1 00
Samuel Hartwell, "	1 00
Warren Fenno, Plums and Nectarines,	1 00

ANNUAL EXHIBITION.

SEPTEMBER 14, 15, 16, and 17.

Special Prizes.

Twelve Gravenstein Apples, Josiah Crosby,	$5 00
Twelve Bartlett Pears, Charles F. Curtis,	5 00
Twelve Peaches of any variety, Samuel Hartwell,	5 00
Twelve Bunches of Native Grapes, John B. Moore,	5 00

Regular Prizes.

APPLES.—Baldwin, Samuel Hartwell,	2 00
Second, John Cummings,	1 00
Danvers Winter Sweet, John Cummings,	2 00
Second, C. N. Brackett,	1 00
Cogswell, O. B. Hadwen,	2 00

Dutch Codlin, B. G. Smith,	$2 00
Second, A. S. McIntosh,	1 00
Fall Orange or Holden Pippin, O. B. Hadwen,	2 00
Second, Edwin Fletcher,	1 00
Fameuse, " "	2 00
Second, B. G. Smith,	1 00
Foundling, Samuel Hartwell,	2 00
Second, L. W. Weston,	1 00
Garden Royal, J. C. McNeal,	2 00
Second, John Cummings,	1 00
Golden Russet, L. W. Weston,	2 00
Second, Warren Fenno,	1 00
Gravenstein, Samuel Hartwell,	2 00
Second, John Cummings,	1 00
Hubbardston Nonsuch, John Cummings,	2 00
Second, C. N. Brackett,	1 00
Hunt Russet, Samuel Hartwell,	2 00
Second, John Cummings,	1 00
King of Tompkins County, William C. Eustis,	2 00
Second, John Fletcher,	1 00
Lady's Sweet, C. N. Brackett,	2 00
Leicester Sweet, O. B. Hadwen,	2 00
Lyscom, " "	2 00
Second, John Cummings,	1 00
Maiden's Blush, John Cummings,	2 00
Second, Warren Fenno,	1 00
Mother, Edwin Fletcher,	2 00
Second, John Cummings,	1 00
Northern Spy, William C. Eustis,	2 00
Second, John B. Moore,	1 00
Porter, George Hill,	2 00
Second, H. M. Wiswall,	1 00
Pumpkin Sweet, Mrs. Susan Smith,	2 00
Second, George W. Stevens,	1 00
Rhode Island Greening, A. D. Capen,	2 00
Second, C. N. Brackett,	1 00
Roxbury Russet, John L. D'Wolf,	2 00
Second, William C. Eustis,	1 00
Talman's Sweet, Josiah Crosby,	2 00
Second, J. T. Foster,	1 00
Washington Strawberry, Warren Fenno,	2 00
CRAB APPLES.—Hyslop, John B. Moore,	2 00
Transcendent, John B. Moore,	2 00
Second, Horace Eaton,	1 00
Any other variety, B. G. Smith, Peach Crab,	2 00
PEARS.—Bartlett, Mrs. Mary Langmaid,	2 00
Second, Warren Heustis,	1 00

Belle Lucrative, Isaac Oliver,	$2 00
Second, John C. Park,	1 00
Beurre d'Anjou, Mrs. Mary Langmaid,	2 00
Second, Mrs. M. T. Goddard,	1 00
Beurre Bosc, William P. Walker,	2 00
Second, Warren Fenno,	1 00
Beurre Clairgeau, Charles P. Curtis,	2 00
Second, William T. Hall,	1 00
Beurre Diel, Mrs. H. P. Kendrick,	2 00
Second, Walker & Co.,	1 00
Beurre Hardy, Walker & Co.,	2 00
Second, Warren Fenno,	1 00
Beurre Langelier, Marshall P. Wilder,	2 00
Second, S. G. Damon,	1 00
Beurre Superfin, Lewis Slack,	2 00
Second, S. G. Damon,	1 00
Dana's Hovey, Mrs. Jesse Haley,	2 00
Second, S. G. Damon,	1 00
Doyenne Boussock, E. W. Wood,	2 00
Second, Marshall P. Wilder,	1 00
Doyenne du Comice, Eben Snow,	2 00
Second, Warren Fenno,	1 00
Duchesse d'Angouleme, W. S. Janvrin,	2 00
Second, Alexander Dickinson,	1 00
Fulton, John C. Park,	2 00
Second, John L. Bird,	1 00
Glout Morceau, William P. Walker,	2 00
Second, John L. D'Wolf,	1 00
Goodale, C. E. Grant,	2 00
Second, Warren Fenno,	1 00
Howell, W. S. Janvrin,	2 00
Second, B. G. Smith,	1 00
Lawrence, John McClure,	2 00
Second, A. S. McIntosh,	1 00
Louise Bonne of Jersey, William T. Hall,	2 00
Second, Warren Fenno,	1 00
Marie Louise, S. G. Damon,	2 00
Second, Warren Fenno,	1 00
Merriam, John L. D'Wolf,	2 00
Second, A. S. McIntosh,	1 00
Mount Vernon, Walker & Co.,	2 00
Second, Charles Bird,	1 00
Onondaga, W. P. Walker,	2 00
Second, A. McDermott,	1 00
Paradis d'Automne, C. N. Brackett,	2 00
Second, Marshall P. Wilder,	1 00
Pratt, " " "	2 00

Seckel, Horace Eaton,	$2 00
Second, John L. Bird,	1 00
Sheldon, C. F. Curtis.	2 00
Second, Horace Eaton,	1 00
Souvenir du Congrès, Warren Fenno,	2 00
Second, Marshall P. Wilder,	1 00
St. Michael Archangel, Walker & Co.,	2 00
Second, Warren Fenno,	1 00
Urbaniste, Mrs. Mary Langmaid,	2 00
Second, John L. Bird,	1 00
Vicar of Winkfield, W. P. Walker,	2 00
Second, Edwin A. Hall,	1 00
Winter Nelis, John L. Bird,	2 00
Second, John C. Park,	1 00
PEACHES.—Any one variety, Samuel Hartwell, Stump the World,	2 00
Second, L. W. Weston, Crawford's Late,	1 00
PEACHES.—Orchard House Culture, John Falconer, Crawford's Late,	4 00
NECTARINES.—Any variety, Alonzo R. James,	2 00
Second, John Falconer,	1 00
PLUMS.—Not less than four varieties, Horace Eaton,	4 00
Second, John B. Moore,	3 00
Any one variety, J. L. Nicolson, Bradshaw,	2 00
Second, B. G. Smith, Coe's Golden Drop,	1 00
GRAPES.—Six bunches of Brighton, Joseph S. Chase,	2 00
Second, Hovey & Co.,	1 00
Concord, Joseph S. Chase,	2 00
Second, William Doran & Son,	1 00
Delaware, Joseph S. Chase,	2 00
Second, E Snow,	1 00
Hartford Prolific, Moses Darling, Jr.,	2 00
Second, S. G. Damon,	1 00
Massasoit, Mrs. E. M. Gill,	2 00
Second, Joseph S. Chase,	1 00
Moore's Early, John B. Moore,	2 00
Second, B. G. Smith,	1 00
Wilder, J. W. Talbot,	2 00
Second, Joseph S. Chase,	1 00
Any other variety, C. J. Copley, Lindley,	2 00
Second, J. W. Talbot, Norwood,	1 00
FOREIGN GRAPES.—Six varieties, two bunches each, A. W. Nickerson,	10 00
Second, B. G. Smith,	8 00
Third, E. H. Luke,	4 00
Four varieties, two bunches each, H. L. Higginson,	8 00
Two " " " " A. W. Nickerson,	4 00
Second, John L. Gardner,	3 00
Third, E. H. Luke,	2 00
Two bunches of any Black Grape, John L. Gardner, Black Hamburg,	4 00

Second, H. L. Higginson, Wilmot's Black Hamburg,	$3 00
Third, C. D. Kingman, " " "	2 00
Two bunches of any White Grape, John L. Gardner, Muscat of Alexandria,	4 00
Second, M. H. Simpson, Buckland Sweetwater,	3 00
Third, John Falconer, White Tokay,	2 00

Gratuities:—

Dr. G. G. Kennedy, Apples,	3 00
C. N. Brackett, "	2 00
Warren Fenno, "	1 00
John B. Moore, "	1 00
Sidney Lawrence, "	1 00
Samuel Hartwell, " and Pears,	2 00
John Cummings, " "	2 00
B. G. Smith, " "	2 00
J. W. Talbot, President Clark Pears,	1 00
Marshall P. Wilder, Pears,	3 00
M. W. Chadbourne, "	3 00
Francis B. Hayes, "	2 00
C. E. Grant, "	2 00
T. M. Davis, "	2 00
Charles Bird, "	1 00
John B. Moore, "	1 00
P. Ames, Peaches,	2 00
C. H. Parker, "	1 00
George Hill, "	1 00
Moses Darling, Jr., "	1 00
J. L. D. Sullivan, "	1 00
J. H. Ricketts, Mrs. Brett Peaches (fine),	1 00
R. G. Chase & Co., Duchess Grapes,	1 00
B. G. Smith, Native Grapes,	2 00
C. J. Copley, " "	3 00
J. H. Ricketts, " "	2 00
M. P. Wilder, " "	1 00
C. E. Grant, " "	1 00

SEPTEMBER 25.

Gratuities:—

George S. Harwood, Sheldon, Seckel, and Louise Bonne of Jersey Pears (very fine),	3 00
Barnabas Davis, Black Hamburg Grapes,	1 00
N. D. Harrington, Crawford's Late Peaches,	1 00

OCTOBER 2.

PEARS.—Beurre Bosc, Charles F. Curtis,	2 00
Second, A. A. Smith,	1 00
Beurre Clairgeau, Charles F. Curtis,	2 00

Second, Mrs. Mary Langmaid,	$1 00
Beurre Diel, Mrs. H. P. Kendrick,	2 00
Second, Edward Sparhawk,	1 00
Beurre Superfin, Warren Fenno,	2 00
Doyenne du Comice, John McClure,	2 00
Second, Warren Fenno,	1 00
Duchesse d'Angouleme, Mrs. H. P. Kendrick,	2 00
Second, W. S. Janvrin,	1 00
Louise Bonne of Jersey, John McClure,	2 00
Second, Warren Fenno,	1 00
Sheldon, C. F. Curtis,	2 00
Second, John McClure,	1 00
Urbaniste, Samuel Downer,	2 00
Second, S. G. Damon,	1 00
Apples.—Fall Orange or Holden Pippin, Charles N. Brackett,	2 00
Second, Edward Sumner,	1 00
Gravenstein, Samuel Hartwell,	2 00
Second, John Cummings,	1 00
Mother, " "	2 00
Second, C. Terry,	1 00
Porter, S. G. Damon,	2 00
Second, A. S. McIntosh,	1 00
Any other variety, W. C. Eustis, Tompkins County King,	2 00
Second, Warren Fenno, Washington Strawberry,	1 00
Quinces.—Any variety, Joseph S. Chase, Orange,	2 00
Second, B. G. Smith, Rea's Mammoth,	1 00
Grapes.—Concord, Joseph S. Chase,	2 00
Second, Horace Eaton,	1 00
Delaware, Joseph S. Chase,	2 00
Second, C. E. Grant,	1 00
Diana, S. G. Damon,	2 00
Second, Joseph S. Chase,	1 00
Isabella, Moses Darling, Jr.,	2 00
Second, T. M. Davis,	1 00
Massasoit, Joseph S. Chase,	2 00
Any other variety, Horace Eaton, Eaton's Seedling,	2 00
Second, Horace Eaton, Worden,	1 00
Foreign Grapes.—Two bunches of any variety, B. G. Smith, Muscat Hamburg,	3 00
Second, B. G. Smith, Golden Hamburg,	2 00

Gratuities:—

I. P. Langworthy, White Doyenne Pears (fine),	1 00
A. D. Capen, Apples and Pears,	1 00
C. E. Grant, Pears and Grapes,	2 00
B. G. Smith, Plums and "	1 00
M. Stoddard, Seedling Peaches (fine),	1 00

OCTOBER 16.

Gratuities:—

Mrs. H. V. Draper, Pears and Grapes,	$1 00
Franklin Patch, Jacobs's Sweet Apples,	1 00

NOVEMBER 10.

PEARS.—Beurre d' Anjou, Warren Fenno,	2 00
Second, Mrs. Mary Langmaid,	1 00
Dana's Hovey, Mrs. Jesse Haley,	2 00
Second, Mrs. H. P. Kendrick,	1 00
Doyenne du Comice, Warren Fenno,	2 00
Josephine de Malines, " "	2 00
Second, B. G. Smith,	1 00
Lawrence, John McClure,	2 00
Second, Warren Fenno,	1 00
Vicar of Winkfield, John McClure,	2 00
Second, Amos Bates,	1 00
Winter Nelis, John L. Bird,	2 00
Second, T. M. Davis,	1 00
Any other variety, A. S. McIntosh, Glout Morceau,	2 00
Second, Amos Bates, Mount Vernon,	1 00

French Premiums.

APPLES.—Baldwin, J. H. Norcross,	2 00
Second, John Cummings,	1 00
Danvers Winter Sweet, Edward Sumner,	2 00
Second, John Cummings,	1 00
Hubbardston Nonsuch, M. W. Chadbourne,	2 00
Second, W. C. Eustis,	1 00
Hunt Russet, Samuel Hartwell,	2 00
Second, John Cummings,	1 00
King of Tompkins County, Edward Sumner,	2 00
Second, William C. Eustis,	1 00
Lady's Sweet, C. N. Brackett,	2 00
Second, Horace Eaton,	1 00
Northern Spy, W. C. Eustis,	2 00
Second, C. A. Cripps,	1 00
Rhode Island Greening, C. N. Brackett,	2 00
Second, Horace Eaton,	1 00
Roxbury Russet, W. C. Eustis,	2 00
Second, Warren Fenno,	1 00
Talman's Sweet, Josiah Crosby,	2 00
Second, J. T. Foster,	1 00

Gratuities:—

Horace Eaton,	Apples,	$2 00
John Cummings,	"	2 00
O. B. Hadwen,	"	1 00
B. G. Smith,	"	1 00
Samuel Hartwell,	"	1 00
C. E. Grant,	Pears,	3 00
Warren Fenno,	"	2 00
M. W. Chadbourne,	"	1 00
Mrs. Gates,	"	1 00

FIRST CLASS CERTIFICATES OF MERIT.

Annual Exhibition, September 14–17. Vivus W. Smith, Syracuse, N. Y., Seedling Grapes.

Annual Exhibition. Niagara Grape Company, Lockport, N. Y., Niagara Grapes.

Annual Exhibition. J. G. Burrow, Fishkill, N. Y., Jefferson Grapes.

" " John B. Moore, Francis B. Hayes Grapes.

October 2. John Pocklington, Sandy Hill, N. Y., Pocklington Grapes.

" J. W. Talbot, Norwood Grapes.

REPORT

OF THE

COMMITTEE ON VEGETABLES,

FOR THE YEAR 1880.

By CHARLES N. BRACKETT, Chairman.

A review of the records of the exhibition season, for the year now closing, affords a very encouraging manifestation of progress in this department throughout the year.

The products of the soil never fail to respond to the enterprise and industry of those who remember the old-time promise, that "seed time and harvest shall never fail." A succession of bountiful crops, and an unusual demand for them both at home and abroad, has in a great measure tended to quicken enterprise, and encourage labor with an adequate reward.

The improvement noticed in our exhibitions, as compared with the previous year, is perhaps in part due to a favorable season. No one, however, at all familiar with the merits of the case, will, we think, question the fact that the Society is largely, if not mainly, indebted for the wonderful change that has taken place for the better to the return to more frequent exhibitions, and the offer of *prizes* at those exhibitions, instead of gratuities, as was the case last year.

In former reports, your Committee have had occasion to regret the apparent falling off in interest in forcing vegetables, and the lack of specimens on our tables during the winter and early spring months. They are pleased to be able to report some slight improvement in this direction the past year.

Your Committee are still of the opinion that these objects constitute an interesting and valuable feature, and are a great addition to our winter shows, and worthy of encouragement by the

Society. From the commencement of the year until the middle of March, no prizes are offered for vegetables grown under glass. Your Committee have, for a long time, felt that this important interest has been neglected. We have no doubt that, if suitable prizes were offered, a lively competition would spring up among our enterprising market gardeners and others, and, as a result, our tables would be filled with the rarest and choicest specimens of their skill.

The cultivation of the usual varieties of vegetables under glass commends itself to all of us, as a means of obtaining what may be considered a luxury, as well as an article of diet conducive to health. They are wholesome and nutritious articles of food, needed for the preservation of health and prevention of disease, and, as such, their culture should be considered a subject of much importance, and worthy of all the labor and patience required to produce them. In view of their importance, your Committee would respectfully suggest that, another year, the income accruing from the Whitcomb fund be devoted to this purpose.

During the months of January, February, and March, we were indebted to the following contributors for very fine specimens of the vegetables mentioned:

January 3 and February 14, to Cephas H. Brackett, for excellent specimens of White Spine cucumbers, mushrooms, and tomatoes. January 31 and March 6, J. B. Moore showed dishes of the finest and best grown mushrooms ever seen on our tables, which attracted the particular attention of all interested in the cultivation of this favorite epicurean fungus vegetable. February 14, W. C. Strong, tomatoes. February 28, Josiah Crosby, specimens of very large and well-grown dandelions. March 6, Walter Russell, two varieties of radishes, — Long Scarlet, and French Breakfast; and George F. Stone, fine specimens of Tennisball lettuce. At the opening exhibition, March 18, this department was well represented, and again at the Rose Show, June 18. The various specimens and varieties offered for prizes were well grown, and competition was unusually brisk. May 8, Aaron Low showed specimens of his Hybrid Turban squash, in an excellent state of preservation.

Throughout the season the exhibitions have generally been good, and in marked contrast with those of the previous year. We might particularize, but it would only be a repetition, and

make our report too long, as the annexed list of prizes and gratuities awarded by your Committee covers the whole ground.

The Schedule of Prizes offered the past season has proved popular, mainly, we are inclined to think, on account of the offering of fixed prizes at each weekly exhibition. By this arrangement, the hall has always presented an appearance creditable alike to the Society and the exhibitors.

The Annual Exhibition was, in all respects, a good one. The show of Potatoes at this exhibition, for beauty, size, and smoothness of growth, has rarely, if ever, been excelled. Owing to favorable circumstances, this crop, the past season, has been one of unusual excellence. The Colorado beetle, it is true, has in some instances been more or less destructive, but by a timely application of Paris green, properly and persistently applied, the ravages of this pest can be controlled. Prominent among the different varieties on exhibition at this show, we may mention the following: Early Rose, Beauty of Hebron, Snowflake, Clarke's No. 1, Mammoth Pearl, King of the Earlies, Early Ohio, Dunmore, Burbank, St. Patrick, and Early Vermont.

E. S. Brownell, of Essex Junction, Vt., exhibited, and entered for the Society's Prospective Prize for the best Seedling Late Potato, a new seedling, called the Pride of America, raised by him several years since, and shown here for the first time at the Annual Exhibition. The following is Mr. Brownell's description, which we append for future reference:

"It was raised from a seed-ball of the Eureka, fertilized with the pollen of the White Peach Blow, and combines the wonderful productiveness and excellent keeping qualities of the former, with all the well-known qualities of the latter.

"In appearance it closely resembles the well-known Snowflake, and may be easily mistaken for that favorite variety. It ripens a few days later, and has the advantage over that variety of being adapted to a greater variety of soils, being much more productive, growing to a larger size, and producing but a very few small tubers, nearly all being of a good marketable size; it is a most excellent keeper, and, so far, has shown no signs of disease. In quality it is fully equal to the Snowflake; flesh exceedingly fine grained and of snowy whiteness either baked or boiled; cooks through quickly and evenly, dry and floury; has no hard centre or core; as a table variety is absolutely without a fault. In habit of growth

the vines are of medium length, well covered with a light green, stocky foliage; the tubers grow compactly in the hill, so that the crop can be easily harvested. It is an excellent keeper, and retains all its good qualities throughout the entire season."

As evidence of its good keeping qualities, Mr. Brownell also exhibited specimens of this variety grown in 1879, which had been kept in the cellar with ordinary care, and which were in an excellent state of preservation, and in good eating condition. We regard this potato as a very promising one, and hope to see it thoroughly tested here the coming season. At the Annual Show there were upwards of forty dishes of potatoes on the tables, comprising nearly all the leading varieties, and constituting a prominent and interesting feature of that exhibition.

The amount appropriated for prizes and gratuities for vegetables was	$500.00
Income from the Whitcomb fund, ...	30.00
Total, ...	$530.00
Amount awarded in prizes and gratuities, . .	527.00
Leaving an unexpended balance of . . .	$3.00

The list of prizes and gratuities awarded by your Committee is annexed.

All of which is respectfully submitted,

C. N. Brackett,
Walter Russell,
Josiah Crosby,
George W. Pierce,
Samuel Hartwell,
C. E. Grant,
M. W. Chadbourne,

Committee on Vegetables.

PRIZES AND GRATUITIES FOR VEGETABLES.

JANUARY 3.

Gratuity :—

C. H. Brackett, Cucumbers and Tomatoes, ... $2 00

JANUARY 31.

Gratuity :—

J. B. Moore, Mushrooms, ... 2 00

FEBRUARY 14.

Gratuities :—

W. C. Strong, Tomatoes, ... 1 00
C. H. Brackett, Mushrooms, Cucumbers, and Tomatoes, . . 2 00

FEBRUARY 28.

Gratuity :—

Josiah Crosby, Dandelions, ... 1 00

MARCH 6.

Gratuities :—

J. B. Moore, Mushrooms, ... 1 00
Walter Russell, Radishes, ... 1 00
George F. Stone, Lettuce, ... 1 00

AZALEA AND ROSE EXHIBITION.

MARCH 18.

LETTUCE.—Four heads Tennisball, J. B. Moore, ... $3 00
Second, J. Crosby, ... 2 00
DANDELIONS.—Peck, J. G. Coolidge, ... 2 00
PARSLEY.—Two quarts, J. G. Coolidge, ... 2 00
CUCUMBERS.—Pair of White Spine, C. H. Brackett, . . . 3 00

Gratuities :—

C. H. Brackett, Mushrooms and Tomatoes, ... 2 00
J. B. Moore, Mushrooms, ... 2 00
James Nugent, Rhubarb, ... 1 00
Samuel Hartwell, Onions, ... 1 00

APRIL 3.

Gratuities:—

B. N. Adams, Lettuce and Mint,	$2 00
George W. Pierce, Lettuce,	1 00

APRIL 17.

Gratuity:—

Charles Garfield, Lettuce,	1 00

MAY 1.

Gratuity:—

Charles Garfield, Lettuce,	1 00

MAY 8.

Gratuities:—

M. W. Chadbourne, Rhubarb, and Hanson Lettuce,	2 00
B. D. Capen, Rhubarb,	1 00
Samuel Hartwell, Asparagus,	1 00
Walter Russell, Radishes,	1 00

MAY 22.

Gratuities:—

E. W. Wood, Cucumbers,	1 00
Samuel Hartwell, Asparagus,	1 00

MAY 29.

Gratuity:—

Josiah Crosby, three varieties of Lettuce,	1 00

JUNE 5.

CARROTS.—Twelve Short Scarlet, J. Crosby,	2 00
RADISHES.—Four bunches Long Scarlet, Walter Russell,	2 00
Second, J. Crosby,	1 00
ASPARAGUS.—Four bunches, J. B. Moore,	2 00
Second, Samuel Hartwell,	1 00
CUCUMBERS.—Pair, E. W. Wood,	2 00
Second, J. Crosby,	1 00
LETTUCE.—Four heads, J. B. Moore,	2 00
Second, Walter Russell,	1 00
RHUBARB.—Twelve stalks, S. Hartwell,	2 00
Second, M. W. Chadbourne,	1 00

Gratuities:—

Walter Russell, Onions,	1 00
L. W. Weston, Asparagus,	1 00
A. T. Brown, Carrots,	1 00
Josiah Crosby, Beets,	1 00
Francis B. Hayes, three varieties of Cucumbers,	1 00

JUNE 12.

Gratuities:—

C. E. Grant, Peas,	$1 00
Samuel G. Stone, Peas,	1 00

ROSE EXHIBITION.

JUNE 18.

BEETS.—Twelve Turnip Rooted, W. Russell,	$2 00
Twelve Egyptian, Josiah Crosby,	2 00
CARROTS.—Twelve Intermediate, J. Crosby,	2 00
ONIONS.—Twelve, Walter Russell,	2 00
Second, Josiah Crosby,	1 00
CUCUMBERS.—Pair of White Spine, George W. Pierce,	2 00
Second, Josiah Crosby,	1 00
CABBAGES.—Four, J. Crosby, Henderson's Early,	2 00
Second, " " Jersey Wakefield,	1 00
LETTUCE.—Four heads, J. Crosby,	2 00
Second, George W. Pierce,	1 00
PEAS.—Peck, S. Hartwell, Advancer,	2 00
Second, Samuel G. Stone, Alpha,	1 00

Gratuities:—

C. H. Brackett, Tomatoes,	1 00
James Bard, Fig Tomatoes,	1 00
M. W. Chadbourne, Beauty of Hebron Potatoes,	2 00
C. N. Brackett, Hanson Lettuce,	1 00
J. B. Moore, Lettuce,	1 00
Walter Russell, Radishes,	1 00

JUNE 26.

Gratuities:—

Josiah Crosby, Collection,	2 00
Samuel G. Stone, String Beans,	2 00
Cephas H. Brackett, Tomatoes,	1 00

JULY 3.

ONIONS.—Twelve specimens, J. Crosby,	2 00
Second, W. Russell,	1 00
SQUASHES.—Four Long Warted Summer, W. Russell,	2 00
Second, J. Crosby,	1 00
CABBAGES.—Four, Walter Russell,	2 00
Second, J. Crosby,	1 00
CRANBERRY BEANS.—Peck, Walter Russell,	2 00
Second, Samuel G. Stone,	1 00
PEAS.—Peck, Samuel G. Stone, Champion,	2 00
Second, " " " Advancer,	1 00

Gratuities:—

E. W. Wood, Tomatoes,	$1 00
Josiah Crosby, Wakefield Cabbages,	1 00
Francis B. Hayes, two varieties of Cucumbers,	1 00
Walter Russell, Wax Beans,	1 00
Samuel G. Stone, " "	1 00

JULY 10.

POTATOES.—Peck, M. W. Chadbourne, Beauty of Hebron,	3 00
Second, C. N. Brackett, Clark's No. 1,	2 00
Third, M. W. Chadbourne, Early Rose,	1 00

Gratuities:—

Samuel G. Stone, Collection,	2 00
J. Crosby, "	2 00

JULY 17.

SQUASHES.—Four Marrow, J. Crosby,	3 00
SWEET CORN.—Twelve ears, S. G. Stone,	3 00
Second, C. E. Grant,	2 00
TOMATOES.—Twelve specimens, C. N. Brackett, Emery,	3 00
Second, C. N. Brackett, Gen. Grant,	2 00

Gratuities:—

Josiah Crosby, Onions and Squashes,	2 00
Alexander Anderson, Early Rose Potatoes,	1 00
W. H. Spooner, Beans,	1 00
S. G. Stone, Collection,	1 00

JULY 24.

SWEET CORN.—Twelve ears, M. W. Chadbourne,	3 00
Second, Josiah Crosby,	2 00
Third, S. G. Stone,	1 00
TOMATOES.—Twelve, C. N. Brackett, Emery,	3 00
Second, " " Gen. Grant,	2 00
Third, " " Paragon,	1 00

Gratuities:—

J. B. Moore, Collection of Tomatoes,	1 00
Samuel G. Stone, Beans,	1 00
Samuel Hartwell, Sweet Corn,	1 00
C. E. Grant, " "	1 00

JULY 31.

SQUASHES.—Four Marrow, J. Crosby,	2 00
SWEET CORN.—Twelve ears, Samuel Hartwell,	2 00
Second, L. W. Weston,	1 00
TOMATOES.—Twelve Gen. Grant, C. N. Brackett,	2 00
Twelve Emery, " "	2 00
Any other variety, " " Acme,	2 00

Gratuities: —

Francis B. Hayes, Turnips,	$1 00
Walter Russell, Egg Plant,	2 00
C. E. Grant, Corn,	1 00
M. W. Chadbourne, Potatoes,	1 00
J. Crosby, Early Rose Potatoes,	1 00

AUGUST 7.

EGG PLANT.—Four Large Round Purple, J. B. Moore,	3 00
Second, J. Crosby,	2 00
Third, Walter Russell,	1 00

Gratuities: —

M. W. Chadbourne, Collection,	2 00
C. N. Brackett, "	2 00
Samuel Hartwell, Sweet Corn,	1 00
Mrs. E. M. Gill, Beans,	1 00
Samuel G. Stone, Tomatoes,	1 00

AUGUST 14.

EGG PLANT.—Four Large Round Purple, J. B. Moore,	2 00
Second, Josiah Crosby,	1 00
MUSKMELONS.—Four, Samuel Hartwell,	2 00
GREENFLESH.—Four, C. F. Curtis,	2 00

Gratuities: —

M. W. Chadbourne, Sweet Corn,	1 00
Mrs. E. M. Gill, " "	1 00
J. B. Moore, Acme Tomatoes,	1 00
J. K. Bennett, Squashes, growth of 1879,	1 00
Samuel Hartwell, Collection,	2 00
C. E. Grant, "	2 00
C. N. Brackett, "	2 00
Samuel G. Stone, "	1 00

AUGUST 21.

POTATOES.—Peck, John Cummings, Early Rose,	2 00
BEANS.—Two quarts Lima, B. G. Smith,	3 00
Second, Samuel Hartwell,	2 00
Third, Samuel G. Stone,	1 00
PEPPERS.—Twelve, J. Crosby,	3 00
Second, C. N. Brackett,	2 00

Gratuities: —

Mrs. E. M. Gill, Tomatoes,	1 00
J. B. Moore, Acme Tomatoes,	1 00

M. W. Chadbourne, Collection,	$1 00
Samuel Hartwell, "	1 00
C. N. Brackett, "	1 00
J. Cummings, "	1 00
S. G. Stone, "	1 00
C. E. Grant, "	1 00

AUGUST 28.

WATERMELONS.—Pair, Samuel Hartwell,	3 00
Second, Samuel Hartwell,	2 00
GREENFLESH MELONS.—Four, George F. Curtis,	3 00
Second, Samuel Hartwell,	2 00

Gratuities:—

John Cummings, Collection,	3 00
Samuel G. Stone, "	1 00
Samuel Hartwell, "	1 00
C. N. Brackett, "	1 00

SEPTEMBER 4.

CAULIFLOWERS.—Four, John Cummings,	3 00
Second, J. L. Gardner,	2 00
CELERY.—Four roots, Alfred Tufts,	3 00
Second, Josiah Crosby, Boston Market,	2 00
Third, " " Golden Heart,	1 00

Gratuities:—

Samuel Hartwell, Collection,	1 00
Samuel G. Stone, "	1 00

ANNUAL EXHIBITION.

SEPTEMBER 14, 15, 16, AND 17.

BEETS. — Twelve Turnip Rooted, G. F. Stone,	$3 00
Second, Josiah Crosby,	2 00
Third, Walter Russell,	1 00
CARROTS. — Twelve Long Orange, J. L. D'Wolf,	3 00
Second, Josiah Crosby,	2 00
Third, Walter Russell,	1 00
Intermediate, Josiah Crosby,	3 00
Second, J. Cummings,	2 00
Third, Walter Russell,	1 00
PARSNIPS.—Twelve Long, J. L. D'Wolf,	3 00
Second, M. W. Chadbourne,	2 00
Third, Walter Russell,	1 00

POTATOES.—Four varieties, one peck each, C. N. Brackett,	$4 00
Second, Aaron Low,	3 00
Third, Mrs. M. T. Goddard,	2 00
Early Rose, John Cummings,	3 00
Second, A. T. Brown,	2 00
Third, C. Terry,	1 00
Snowflake, John L. D'Wolf,	3 00
Second, Mrs. Mary T. Goddard,	2 00
Any other variety, C. N. Brackett, Mammoth Pearl,	3 00
Second, J. B. Moore, Mammoth Pearl,	2 00
Third, " " Clark's No. 1,	1 00
SALSIFY.—Twelve specimens, Benjamin G. Smith,	3 00
Second, M. W. Chadbourne,	2 00
Third, Josiah Crosby,	1 00
TURNIPS.—Twelve Flat, W. Russell,	3 00
Second, George F. Stone,	2 00
Third, J. Cummings,	1 00
Twelve Swedish, Mrs. M. T. Goddard,	3 00
Second, A. T. Brown,	2 00
ONIONS.—Peck of Danvers Yellow, J. Crosby,	3 00
Second, George Hill,	2 00
Third, John Cummings,	1 00
Red, " "	3 00
Second, George Hill,	2 00
Third, Walter Russell,	1 00
Portugal, " "	3 00
Second, J. Crosby,	2 00
Third, J. Cummings,	1 00
GREENFLESH MELONS.—Four, George W. Pierce,	3 00
Second, C. E. Calder,	2 00
WATERMELONS.—Two, I. P. Dickinson, Brown Solid,	3 00
Second, " " Excelsior,	2 00
Third, " " Black Italian,	1 00
SQUASHES.—Four Canada, Mrs. M. T. Goddard,	3 00
Second, C. E. Calder,	2 00
Third, Warren Fenno,	1 00
Hubbard, Walter Russell,	3 00
Second, George Hill,	2 00
Third, David Warren,	1 00
Marblehead, John Cummings,	3 00
Second, Walter Russell,	2 00
Marrow, George Hill,	3 00
Second, Walter Russell,	2 00
Third, J. Cummings,	1 00
Turban, " "	3 00
Second, George Hill,	2 00
Third, Walter Russell,	1 00

Cabbages.—Three Drumhead, Mrs. M. T. Goddard,	$3 00
Second, John Cummings,	2 00
Red. " "	3 00
Savoy, " "	3 00
Second, Walter Russell,	2 00
Third, Mrs. M. T. Goddard,	1 00
Cauliflowers.—Four, John Cummings,	3 00
Second, J. L Gardner,	2 00
Celery.—Four roots, Alfred Tufts,	3 00
Second, Josiah Crosby,	2 00
Third, C. W. Ross,	1 00
Endive.—Four specimens, J. L. Gardner,	2 00
Horseradish.—Six roots, Walter Russell,	3 00
Lima Beans.—Two quarts, Benjamin G. Smith,	3 00
Second, Samuel G. Stone,	2 00
Third, C. E. Grant,	1 00
Corn.—Sweet, twelve ears, J. Cummings,	3 00
Second, George Craft,	2 00
Third, A. T. Brown,	1 00
Yellow or Field, twenty-five ears, traced, Mrs. M. T. Goddard,	3 00
Second, C. N. Brackett,	2 00
Egg Plant.—Four Round Purple, Walter Russell,	3 00
Second, John B. Moore,	2 00
Tomatoes.—Three varieties, twelve specimens each, J. Cummings,	4 00
Second, G. W. Pierce,	3 00
Third, C. E. Grant,	2 00
Acme, John Cummings,	2 00
Second, G. W. Pierce,	1 00
Boston Market, John Cummings,	2 00
Second, Walter Russell,	1 00
Emery, John Cummings,	2 00
Second, Samuel G. Stone,	1 00
Gen. Grant, John Cummings,	2 00
Second, C. E. Grant,	1 00
Any other variety, John Cummings, Paragon,	2 00
Second, Aaron Low, Essex Hybrid,	1 00
Martynias.—Twenty-four, M. W. Chadbourne,	2 00
Second, George Craft,	1 00
Okra.—Twenty-four specimens, Mrs. M. T. Goddard,	2 00
Peppers.—Twenty-four, C. N. Brackett,	3 00
Second, G. F. Stone,	2 00
Third, George W. Pierce,	1 00
Gratuities:—	
W. S. Ewell, Tomatoes,	1 00
C. E. Grant, "	1 00
Aaron Low, Hybrid Squashes,	1 00

Josiah Pratt, Canada Squashes,	$1 00
David Warren, Butman Squashes,	1 00
A. T. Brown, Squashes,	1 00
M. W. Chadbourne, Melons,	1 00
C. D. Kingman, Sweet Potatoes,	1 00
Benjamin G. Smith, Beets,	1 00
C. N Brackett, "	1 00
F. Trebandt, Endive,	1 00
Horace Partridge, Pop Corn,	1 00
John Cummings, Collection,	3 00
Samuel Hartwell, "	2 00
M. W. Chadbourne, "	2 00
C. N. Brackett, "	1 00
Dr. G. G. Kennedy, "	1 00
George W. Pierce, "	1 00
C. E. Calder, Lettuce,	1 00

SEPTEMBER 25.

Gratuities: —

Samuel G. Stone, Lima Beans,	1 00
C. E. Grant, " "	1 00

OCTOBER 2.

SALSIFY.—Twelve roots, B. G. Smith,	2 00
Second, M. W. Chadbourne,	1 00
CABBAGES.—Three Drumhead, J. Cummings,	2 00
Second, Samuel Hartwell,	1 00
Red, John Cummings,	2 00
Savoy, " "	2 00
Second, Samuel Hartwell,	1 00
CAULIFLOWERS.—Four, J. Cummings,	3 00
CELERY.—Four heads, Josiah Crosby,	3 00

Gratuities:—

B. G. Smith, Lima Beans,	1 00
J. L. Gardner, Endive,	1 00
S. G. Stone, Collection,	1 00
Samuel Hartwell, "	1 00
C. E. Grant, "	1 00
M. W. Chadbourne, "	1 00

OCTOBER 16.

Gratuity:—

Josiah Crosby, Celery,	1 00

OCTOBER 30.

Gratuity :—

Josiah Crosby, Celery,	$1 00

NOVEMBER 10.

Gratuities :—

Josiah Crosby, Celery,	1 00
Cephas H. Brackett, Cucumbers,	1 00
Samuel Hartwell, Collection,	1 00
C. E. Grant, "	1 00

REPORT

OF THE

COMMITTEE ON GARDENS,

FOR THE YEAR 1880.

Your Committee beg leave to report that, although the prizes offered have failed to draw competition, they are not discouraged, for they remember that precisely the same state of things occurred in 1864; but, since then, many beautiful places have been examined and reported on by the Committee, who have made such awards as in their judgment were deserved. The Committee believe that this branch of the Society's work, during these years, has had its full share in the advancement of horticulture, especially in Landscape Gardening, where it rises to the dignity of a fine art, and they have faith that its interest will revive, and that its influence will be as useful as ever.

The Society are certainly under great obligations to the gentlemen who, in past years, have opened their elegant grounds and homes, to the examination of the Committee, and extended hospitalities to its members, and others. The proprietors of these estates are benefactors of no ordinary kind, not only to your Committee, and this Society, but to the community, in creating and maintaining establishments so attractive and useful to all lovers of horticulture, as examples of what can be accomplished by wise and judicious expenditure.

These tangible examples of successful landscape gardening and horticulture, are of far greater value to the lover of the beautiful than any dry disquisition on the art we love so well.

Active competition has a great deal to do with the success of any society, especially one of the character of ours; and we trust that in the future, a more lively interest in this direction will be manifested.

For the Committee,

BENJAMIN G. SMITH, *Chairman.*

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS,

FOR THE YEAR 1880.

The Committee of Arrangements, respectfully submit herewith their report for the present year.

The Committee congratulate the members of the Massachusetts Horticultural Society upon the excellent and fine exhibitions during the year 1880. The show of Azaleas and Roses in March, was superior to any ever made, and gave great satisfaction. The Rose and Strawberry Show, in June, notwithstanding the extreme heat and dry weather of the week or ten days previous, was much better than we had reason to expect, and was indeed very fine.

The weekly shows have been equal, if not superior, to those of previous years, and more fully attended.

The Annual Exhibition, on the 14th, 15th, 16th, and 17th of September, has never been surpassed in excellence and beauty; the large display of plants by numerous contributors was truly magnificent, and the great quantities of Cut Flowers, Bouquets, Fruits, and Vegetables, were much admired by the many visitors who had the good fortune to visit the exhibition. Too much praise cannot be awarded the several committees for their labor and care in arranging the choice selections of plants, flowers, fruits, and vegetables of the many contributors.

The deep interest felt by the members in the success and prosperity of the Society increases year by year, and the work commenced more than fifty years ago for the advancement of pomology and of gardening in all its branches, goes on with undiminished and increased ardor and love.

The Committee believe that although so much has been done—so many new fruits, plants, flowers, and vegetables have been intro-

duced and successfully cultivated, yet much more is to be accomplished, requiring the renewed and vigorous efforts of every one connected with the Society, and who believes in its glorious future. The Massachusetts Horticultural Society is still in its infancy, but with an active and untiring interest in its welfare and prosperity, it cannot fail in time to become one of the greatest and most powerful means for the benefit and happiness of mankind.

The Committee have found it desirable to have a permanent record of their action at the meetings held from time to time, and at their request the Secretary of the Society has kept such a record, but as the doings of the Committee at their meetings are merely matters of business, in relation to the collecting and arranging of the fruits, plants, flowers, and vegetables for the exhibitions, they would be of little interest in this report.

For the Committee,

CHARLES H. B. BRECK, *Chairman.*

REPORT

OF THE

COMMITTEE ON PUBLICATION AND DISCUSSION,

FOR THE YEAR 1880.

The chief event which we are called to notice has been the publication of the History of the Society. After a consideration of various plans it was judged best to print only an edition sufficiently large to supply the want of the members and such present demand from the public as we might reasonably anticipate. The price to subscribers has been placed somewhat below the actual cost, if we include the cost of stereotypes, steel plate, and heliotypes, and yet the entire cost will not involve the Society in a large expense after deducting the amount received from sales. The total cost of the edition has been $1,200. But we now own all the plates and stereotypes, so that a future edition may be produced at comparatively little cost. We believe that no other such publication in this country contains so much and such valuable information connected with our art, and we think the Society is greatly indebted to its editor for the clear and connected record which he has given. We are confident the volume will become increasingly valuable.

The extra labor which was placed upon our editor in the preparation of a carefully revised list of members, together with work demanded by the American Pomological Society, delayed the publication of the second part of our Transactions beyond the usual time. We believe the discussions have been maintained with the usual interest, and that the Transactions, under the careful reporting of our Secretary, will be found to contain valuable information. Since the establishment of this course of essays, lectures, and discussions, we think much good has resulted; information has been diffused and our members have been stimulated in their endeavors. It is

an influence which we cannot measure, and therefore we may be inclined to undervalue and underestimate it. But it must be apparent that such a body of intelligent cultivators may communicate their observations and experience to very great profit. We might also avail ourselves of the services of professional specialists and thus obtain information and secure credit to the Society. While we are by no means discouraged in the results which have already been attained in this direction, yet we are convinced that more should be attempted. The retiring members of this Committee take this opportunity again to urge upon the members of the Society to bring all their resources to the aid of the new Committee, and thus to make certain the result of mutual profit to themselves and credit to the Society.

W. C. STRONG,
A. B. MUSSEY,
E. L. STURTEVANT,
} *Committee.*

Report of the Secretary,

FOR THE YEAR 1880.

At the date of my last report, the History of the Society had just been placed in the hands of the printer. When the work had arrived at that stage, it was necessary that my first attention should be given to it, and this was accordingly done, at the expense of postponing all other work that could be. The list of officers and members to be found in the Appendix, was not included in the original plan, and its preparation was not commenced until after the printing of the History had begun. Its preparation required much time and care, and added to the time occupied in printing the book; but, it is believed to increase the value of the History to such an extent that the delay caused by it will not be regretted. The typographical execution of the book, it is believed, has given entire satisfaction to all; and I only regret that my utmost efforts were unsuccessful in inducing the printers to push the work more rapidly. The various agricultural and horticultural journals, to which copies have been sent, have spoken of it with high commendation, and the manner in which it has been received, generally, is such as to lead to the belief that the whole edition, now printed, may be disposed of. At present, a considerable number of subscribers have not called for their copies; but, it is hoped that before the close of the year, all subscribers' copies will be delivered.

Some time before the History was placed in the hands of the printer, I had commenced the preparation for the press of the second part of the Transactions for 1879, but this was among the things on which work was necessarily suspended, when the History was put to press. It was resumed as soon as the History was so far completed as to allow it, and has now been completed, and the arrears of the Transactions, still remaining, will soon be brought up. The various records mentioned in former reports, which it has devolved on me to keep, need not be again enumerated here; but,

I may say, that this year there has been added to them a record of the meetings of the Committee of Arrangements, which the Committee were desirous to have in permanent form. Many specimens of fruit have been presented for name, but not as many as last year. The multifarious calls on the time of a Secretary, which it is impossible to specify, have not been less than usual, and with those which I have attempted to indicate, have thoroughly filled my time.

ROBERT MANNING, *Secretary.*

REPORT

OF THE

LIBRARY COMMITTEE,

FOR THE YEAR 1880.

The Committee on the Library present the following, as their report for the year 1880.

The Society's appropriation, and the income of the Stickney Fund have been expended in the manner for which they were designed; and we believe that the additions to the Library thus obtained have been as valuable as those of any previous year.

The names of newly purchased books have been posted in the Library Room, and all persons have been able to keep themselves informed as to the growth of the library from month to month. It is unnecessary, therefore, to speak in minute detail of the purchases that have been made, but we feel that we ought to congratulate the Society upon the acquisition of Reichenbach's great work upon the plants of Central Europe, in twenty-two volumes, containing colored figures of all the species; also, of the Aroideæ Maximilianæ, a splendid work in folio, whose plates are executed in a manner equal to any which our Library has hitherto possessed.

Meanwhile, we have not neglected to purchase many books of a humbler sort, and of a practical, rather than of a scientific bearing. The cultivation of forest trees and of the sugar beet, and the preservation of crops in a green state by the new process called *ensilage*, are all subjects of very great importance, and an inspection of our book lists for the year, will show that care has been taken to procure for our members all the information available upon these topics.

The removal of the combined bookcase and table, which, in the first part of the year, stood in the centre of this room, has been effected in such a manner that the Society has not been a loser,

the material having been utilized in making the cases which now occupy the upper part of the Fruit Committee's room.

The large additions made this year to the library, prompt us to mention again the subject of a card-catalogue of the colored plates. The sooner this work is entered upon, the smaller will be the cost of it; while, of the need of such a catalogue, there can be no question. If we wish to find a colored figure of any flower, we look in Pritzel's Index; if we find no reference to it there, we are completely baffled, for we have thousands of colored figures which that work does not mention.

The number of books suggested to us for purchase, has been much greater this year than last, and we hope that during the coming year, many more members will make use of the blank book kept for that purpose at the Librarian's desk. It should be borne in mind, in making these requests, that the income of the Stickney Fund can be used only in the purchase of works upon botany, horticulture, and landscape gardening; for this reason, we have been obliged to leave some suggested books unbought.

Two years ago, the Library Committee made an attempt to secure a regular supply of the Catalogues of the leading florists and nurserymen throughout America and Europe; but, by some misunderstanding on their part, only one year's issues were sent. Another trial will soon be made, and, we hope, with better results.

For the Committee,

W. E. ENDICOTT, *Chairman.*

LIBRARY ACCESSIONS.

Books Purchased.

Candolle, Alphonse and Casimir de. Monographiæ Phanerogamarum Prodromi nunc continuatio, nunc revisio. Vol. 2. Araceæ, auctore Engler. Royal 8vo. Paris: 1879.

Bentham, G., and J. D. Hooker. Genera Plantarum. Vol. 3, Part 1. Sistens Dicotyledonum Monochlamydearum Ordines XXXVI, Nyctagineas—Ceratophylleas; et Gymnospermearum Ordines III, Gnetaceas—Cycadaceas. 8vo. London: 1880.

Germain de Saint-Pierre, E. Nouveau Dictionnaire de Botanique. Thick 8vo. 1,600 wood-cuts. Paris: 1870.

Jaume St. Hilaire, J. H. Exposition des Familles Naturelles, et de la Germination des Plantes. 3 vols. 4to. Paris: 1805.

The British Florist. 6 vols. 8vo. 81 colored plates. London: 1846.

Newman, John B., M. D. The Illustrated Botany, comprising the most valuable Native and Exotic Plants, with their History, Medicinal Properties, etc. 8vo. Many colored plates. New York: 1846.

Good, Peter P., A. M. The Family Flora and Materia Medica Botanica. 8vo. 2 vols. in 1. 96 colored plates. Elizabethtown, N. J. 1847.

Bentley, Robert, F. L. S., F. R. C. S., and Henry Trimen, M. B., F. L. S., Medicinal Plants. 4 vols. 8vo. 306 colored plates. London: 1880. [Completed.]

Berge, Fr., and Dr. V. A. Riecke. Gift Pflanzenbuch. New edition. Small 4to. 72 colored plates. Stuttgart, 1855.

Bessey, Charles E., M. Sc., Ph. D. Botany for High Schools and Colleges. Small 8vo. 573 wood-cuts. New York: 1830.

Thomé, Otto W. Text-book of Structural and Physiological Botany. Translated and edited by Alfred W. Bennett, M. A., B. Sc., F. L. S. 2d. ed. Small 8vo. Map and 546 wood-cuts. New York: 1878.

Prantl, Dr. K. An Elementary Text-Book of Botany. Translated from the German; the translation revised by S. H. Vines, M. A., D. Sc., F. L. S. 8vo. 275 wood-cuts. Philadelphia: 1880.

Wakefield, Priscilla. An Introduction to Botany, in a Series of Familiar Letters. 12mo. 12 plates. First American, from the Fifth London Edition. Boston, 1811.

Balfour, J. H., F. R. SS. L. and E., F. L. S. First Book of Botany. 12mo. 197 wood-cuts. New York: 1873.

Youmans, Eliza A. Second Book of Botany, a Practical Guide to the Observation and Study of Plants. Small 8vo. 422 wood-cuts. New York: 1874.

Hibberd, Shirley. Field Flowers, suggesting where to go and what to look for in the out-door study of British Plants. Small 8vo. Colored plates and wood-cuts. London: 1870.

Catlow, Agnes. Popular Field Botany. Third edition. 16mo. 20 colored plates. London: 1852.

Coleman, W. S. Our Woodlands, Heaths, and Hedges. 16mo. Colored plates and wood-cuts. London: 1859.

Watson, Sereno. Botany of the Geological Survey of California. Vol. 2. 4to. Cambridge: 1880.

Bigelow, Jacob, M. D. A Collection of Plants of Boston and its Vicinity. Second edition. 8vo. Boston: 1824.

Rich, Obadiah. A Synopsis of the Genera of American Plants. 16mo. Georgetown: 1814.

Jordan, Alexis, et Julio Fourreau. Icones ad Floram Europæ Novo Fundamento Instauram Spectantes, Tomus 1, Fasciculi 1–40. 200 colored plates. Paris: 1866–68. And Fasciculi 41–56. 80 colored plates.

Martrin-Donos, Victor de. Florule du Tarn. 2 vols. 8vo. Paris: 1864, 1867.

Liégard, Auguste. Flore de Bretagne. 12mo. Paris: 1879.

Reichenbach, Ludovicus; Vols. 13, and onward, L. Reichenbach and H. C. Reichenbach, filio. Icones Floræ Germanicæ, et Helveticæ, etc. 21 vols. 4to. Leipsic: 1850–1867. Also, Nos. 1–16 of vol. 22. In all 2,211 colored plates.

Koch, Dr. Wilh. Dan. Jos., and Ernst Hallier. Taschenbuch der Deutschen und Schweizer Flora, etc. 16mo. Leipsic: 1878.

Garcke, Dr. August. Flora von Nord-und Mittel-Deutschland. 16mo. Berlin: 1854.

Graf, F. Die Alpenpflanzen. Hefte 1–11, 13–21. 16mo. 180 colored plates. Prague: 1879.

Deakin, Richard, M. D. Flora of the Colosseum of Rome. 16mo. Colored plates. London: 1873.

Dillenius, J. J., M. D. Hortus Elthamensis Plantarum Rariorum. 2 vols. folio, in one. 324 plates. Leyden: 1774.

Linnæus, Carolus. Hortus Cliffortianus, etc. Folio. 37 pl. Amsterdam: 1737.

Pomel, A. Nouveaux Matériaux pour la Flore Atlantique. First and second Fasciculi. 8vo. Paris: 1874, 1875. [Extrait du Bulletin de la Société de Climatologie d' Alger.]

Lowe, Richard Thomas, M. A. A Manual Flora of Madeira and the adjacent islands of Porto Santo and the Desertas. Vol. 1, and Part 1 of vol. 2, in one vol. 12mo. London: 1868.

Seubert, Mauritius. Flora Azorica. 4to. 15 plates. Bonn: 1854.

Wight, Robert, M. D., F. L. S., etc. Illustrations of Indian Botany, etc. 2 vols. 4to. 182 colored plates. Madras, 1840, 1850.

Boer, P. de. Coniferis Archipelagi Indici. 4to. pamphlet. 3 plates. Utrecht: 1866.

Franchet, A., and Lud. Savatier. Enumeratio Plantarum in Japonia Sponte Crescentium, etc. Vols. 1 and 2. Royal 8vo. Paris: 1875, 1879.

United States Exploring Expedition, 1838–1842, under the command of Charles Wilkes, U. S. N. Vol. 17, Botany. I. Lower Cryptogamia. II. Phanerogamia of the Pacific Coast of North America. 4to. 29 plates. Philadelphia: 1862–1874.

Frezier, M. Relation des Voyage de la Mer du Sud aux Côtes du Chily et du Perou. Small 4to. 37 plates. Paris: 1732.

Johnson, C. Pierpont. The Useful Plants of Great Britain. 8vo. 24 colored plates, by J. E. Sowerby. London: 1862.

Dickson, James H. The Fibre Plants of India, Africa, and the British Colonies. 8vo. London: 1864.

Peyritsch, Dr. J. Aroideæ Maximilianæ. Folio. Frontispiece and 42 colored plates. Vienna: 1879.

Schott, H. Genera Aroidearum Exposita. Folio. 98 plates. Vienna: 1858.

Miquel, F. A. W. Genera Cactearum. 8vo. pamphlet. Rotterdam: 1839.

Pfeiffer, Dr. Louis, and Fr. Otto. Abbildung und Beschreibung Bluhender Cacteen. Vol. 1. 4to. 30 plates. Cassell: 1843.

Puydt, E. de. Les Orchidées. Royal 8vo. 50 colored plates, and 244 wood-cuts. Paris: 1880.

Fitzgerald, R. D., F. L. S. Australian Orchids. Parts 1 and 2. Folio. 17 colored plates. Sydney: no date.

Rohrbach, Paulus. Tropæolaceæ, Molluginaceæ, Alsinaceæ, Silenaceæ, Portulacaceæ, Ficoidaceæ, Elatinaceæ. Folio, pp. 222–323; plates 53–72. [Martius' Flora Braziliensis]. Leipsic: 1872.

Todaro, Agostino. Relazione sulla Cultura dei Cotoni in Italia, seguita da una Monografia del Genere Gossypium. Small 4to., with folio atlas of 12 colored plates. Rome and Palermo: 1877, '78.

Lehmann, Dr. J. G. C. Monographia Generis Primularum. 4to. 9 plates. Leipsic: 1817.

——— — — — —. Revisio Potentillarum. 4to. 64 plates. Breslau and Bonn: 1856.

Franchet, A. Études sur les Verbascum de la France et de l'Europe Centrale. 8vo. pamphlet. Vendome: 1875.

Bocquillon, H. Revue du Groupe des Verbénacées. 8vo. 20 plates. Paris: 1861–1863.

Babington, Charles Cardale, M. A., F. R. S. The British Rubi. 12mo. London: 1880.

Miers, John, F. R. S., F. L. S. The Apocynaceæ of South America. 4to. 35 plates. London and Edinburgh: 1878

Bureau, Édouard. Monographie des Bignoniacées. Imp. 8vo. 31 plates. Paris: 1864

Hall, Hermannus Christianus Van. Specimen Botanicum Exhibens Synopsin Graminum Indigenarum Belgii Partis Septentrionalis, olim VII provinciarum. 8vo. plate. Utrecht: 1821.

Henderson, John. Handbook of the Grasses of Great Britain and America, 12mo. Northport, L. I: 1875.

Ruprecht, F. J. Bambuseæ. 4to. pamphlet. 18 plates. St. Petersburg: 1839.

Mettenius, Dr. Georg. Filices Horti Botanici Lipsiensis. Folio. 30 plates. Leipsic: 1856.

Bolton, James. Filices Britannicæ, an History of the British Proper Ferns. Part 1. 4to. 31 colored plates. Leeds: 1785.

Newman, Edward. A History of British Ferns. With Plates and Glossary. 16mo. London: no date.

Williamson, John. Fern Etchings; illustrating all the species of ferns indigenous to the Northeastern United States and Canada. Second edition, small 4to. 65 plates. Louisville, Ky.: 1879.

Cooke, M. C., M. A., LL. D., A. L. S. Rust, Smut, Mildew, and Mould; an Introduction to the Study of Microscopic Fungi. 16mo. 7 colored plates. London: 1878.

Brown, Robert, D. C. L., F. R. S. Miscellaneous Botanical Works. Issued by the Ray Society. 2 vols. 8vo. text, and 1 vol. folio, of 37 plates. London: 1866–7.

Henfrey, Arthur, F. L. S, Editor. Reports and Papers on Botany, issued by the Ray Society. I. Mohl on the Structure of the Palm-Stem. II. Nägeli on Vegetable Cells. III. Nägeli on the Utricular Structures in the Contents of Cells. IV. Link's Reports on Physiological Botany, for 1844–45. V. Grisebach's Report on Geographical

Botany for 1844. VI. Grisebach's Report on Geographical and Systematic Botany for 1845. 1 vol. 8vo. London: 1849.

Houston, Gulielmus, M. D., R. S. S. Reliquiæ Houstonianæ. Small 4to. 26 plates. London: 1781.

André, Édouard. Traité Général de la Composition des Parcs et Jardins. Roy. 8vo. 11 chromolithographs, and 520 wood-cuts. Paris: 1879.

The Famous Parks and Gardens of the World Described and Illustrated. 4to. Many wood-cuts. 1880.

Cleveland, H. W. S. Landscape Architecture, as applied to the wants of the West; with an essay on Forest Planting on the Great Plains. 16mo. Chicago: 1873.

Sickler, D. Fr. Karl Ludwig. Allgemeine Geschichte der Obstkultur, etc. 8vo. Map and plates. Frankfort on Main: 1802.

Sickler, J. V. Der Teutsche Obstgartner, etc. 22 vols. small 8vo. Many colored and other plates. Weimar: 1794–1804.

Du Mortier, B.-C. Pomone Tournaisienne. 8vo. 91 outlines of pears. Paris, Leipsic, and Tournay: 1869.

Thomas, O. Guide Pratique de l'Amateur de Fruits. Description et Culture de plus de 5,000 Variétés de Fruits, etc. 8vo. Plantières les Metz.

Elliott, F. R. Hand-book for Fruit Growers. 16mo. Wood-cuts. New York: 1876.

Loubat, Alphonse. The American Vine Dresser's Guide. New edition. Small 8vo. New York: 1872.

Husmann, George. American Grape Growing and Wine Making. New edition. Small 8vo. 31 wood-cuts. New York: 1880.

White, Joseph J. Cranberry Culture. 12mo. 34 wood-cuts. New York: 1870.

Halliday, Robert J. A Treatise on the Propagation and Culture of the Camellia Japonica. 12mo. Colored plates and wood-cuts. Baltimore: 1880.

Prior, W. D. Roses and their Culture. 16mo. Colored plates and wood-cuts. London. No date.

Johnson, Edwin A., D. D. Winter Greeneries at Home. 12mo. 19 wood-cuts. New York: 1878.

Heinrich, J. J. The Window Flower Garden. Small 8vo. Many wood-cuts. New York: 1880.

Courtois-Gérard. De la Culture des Fleurs dans les Petits Jardins, sur les Fenêtres, et dans les Appartements. Sixth edition. 16mo. 15 wood-cuts. Paris. No date.

———. De la Culture Maraichère dans les Petits Jardins. Sixth edition. 16mo. 15 wood-cuts. Paris: no date.

Warner, Anna. Miss Tiller's Vegetable Garden and the Money she made by it. 12mo. New York: 1873.

Robinson, William. Gardening Illustrated, for Town and Country. Vol. 1. For the year ending March 1, 1880. Royal 8vo. Many wood-cuts. London: 1880.

Shinn, Charles H. Pacific Rural Hand-book. Small 8vo. San Francisco: 1879.

Beeton's Book of Garden Management. Small 8vo. Colored and other plates, and wood-cuts. London: 1871.

Wood, Samuel. The Tree Planter and Plant Propagator. 42 wood-cuts. 12mo. London: 1880.

——— ——. The Tree Pruner, being a Practical Manual of the Pruning of Fruit Trees, Shrubs, Climbers, and Flowering Plants. 12mo. 65 wood-cuts. London: 1880.

Elliott, F. R. Popular Deciduous and Evergreen Trees and Shrubs, for planting in Parks, Gardens, Cemeteries, etc. 12mo. 64 wood-cuts. New York: 1870.

Ablett, William H. English Trees and Tree Planting. 8vo. London: 1880.

Mongredien, Augustus. Trees and Shrubs for English Plantations. 8vo. Frontispiece and wood-cuts. London: 1870.

Barnard, George. Studies of Trees from Nature. Folio. 30 plates. London: 1868.

Steuart, Sir Henry, Bart., LL.D., F. R. S. E., etc. The Planter's Guide, or a Practical Essay on the best method of giving effect to wood by the removal of large trees and underwood. 8vo. Plates and wood-cuts. New York: 1832.

Useful and Ornamental Tree Planting. Published under the superintendence of the Society for the Diffusion of Useful Knowledge. 8vo. Wood-cuts. London: 1832.

Clement, M. Manuel Forestier. 12mo. Brussels: 1851.

Fiscali, Ferdinand, and Leopold Grabner. Deutschlands Forstcultur-Pflanzen. 8vo., with folio atlas of 18 plates. Vienna: 1854.

Koltz, J. P. J. Traitement du Chêne en Taillis a Écorces. 12mo. 30 wood-cuts. Brussels: 1859.

Jacquot, Charles. Les Codes de la Législation Forestière, etc. Fourth edition. 16mo. pamphlet. Paris: 1866.

Flagg, Wilson. The Birds and Seasons of New England. 8vo. With illustrations. Boston: 1875.

Scheele de Vere, M. Leaves from the Book of Nature. 12mo. Wood-cuts. New York: 1872.

Bailey, John M. The Book of Ensilage; or, the New Dispensation for Farmers. Also Percheron Horses, Cotswold Sheep, Short Horn Cattle, and Berkshire Swine. 8vo. Photographs and wood-cuts. Billerica, Mass.: 1880.

Brown, J. B. Ensilage of Green Crops. From the French of Auguste Goffart. 8vo. Wood-cuts. New York: 1880.

Tull, Jethro. The Horse-Hoeing Husbandry, with an introduction by William Cobbett. 8vo. London: 1822.

Broom Corn and Brooms. Written and compiled by the editors of the American Agriculturist. 12mo. 22 wood-cuts. New York: no date.

Packard, A. S., Jr., M. D. The Injurious Insects of the West; a Report on the Rocky Mountain Locust and other Insects. 8vo. Wood-cuts, maps, and plates. Salem: 1877.

Dean, G. A. The Culture, Improvement, and Management of Landed Estates. Royal 8vo. 12 colored plates. London: 1880.

Marsh, George P. The Earth as Modified by Human Action; a new edition of Man and Nature. 8vo. New York: 1877.

Lippincott's Gazetteer of the World. New edition. Royal 8vo. Philadelphia: 1880.

Books and Pamphlets Presented.

Roe, Edward P. Success with Small Fruits. Small 4to. Many wood-cuts. New York: 1880. The Author.

Drope, Francis. A Short and Sure Guide in the Practice of Raising and Ordering of Fruit Trees. 16mo. Oxford: 1672. John Robinson.

Wallace, Dr. Notes on Lilies and their Culture. Second edition. 8vo. Wood-cuts. Colchester, England: 1879. The Author.

Peacock, J. T. List of Succulent Plants in his Collection at Sudbury House, the Octagon House at Kew, the Alexandra Palace Conservatories, and the Royal Botanical Garden, Regent's Park. 12mo. pamphlet. London: 1878. Waldo O. Ross.

Riley, Charles V. State Entomologist. First to Eighth Annual Reports on the Noxious, Beneficial, and other Insects of the State of Missouri. 2 vols. 8vo. Jefferson City: 1869–76. Isidor Bush.

Eaton, Daniel C. Systematic Fern List of the United States. 8vo. pamphlet. New Haven: 1880. The Author.

Martindale, Isaac C. Notes on the Bartram Oak, Quercus Heterophylla, Michx. 8vo. pamphlet. Camden, N. J.: 1880. The Author.

Sargent, Charles S., Special Agent Tenth Census. A Catalogue of the Forest Trees of North America. 8vo. pamphlet. Washington: 1880.

Catalogue of Trees and Shrubs, Native of, and Introduced in the Horticultural Gardens, adjacent to Horticultural Hall, in Fairmount Park, Philadelphia. 8vo. pamphlet. Philadelphia: 1880.

Hodges, Leonard B. The Forest Tree Planter's Manual. 2d edition, revised and corrected. 8vo. pamphlet. St. Paul, Minn.: 1880. The Author.

Annuaire des Eaux et Forêts pour 1880. 19e année. 24mo. Paris: 1880.

Parsons, Samuel B. Woman in Horticulture, an Essay read before the New York Horticultural Society, May 4, 1880. Small 12mo. pamphlet. The Author.

Henderson, Peter. Essay on Horticultural Progress, read before the New York Horticultural Society, March 9, 1880. With a List of Members of the Society. 16mo. pamphlet. New York: 1880.

Western New York Horticultural Society. Proceedings at the Twenty-fifth Annual Meeting, Rochester, January 28 and 29, 1880. 8vo. pamphlet. Rochester: 1880. P. C. Reynolds.

New Jersey Horticultural Society. Proceedings at the Fourth Annual Meeting, January 15 and 16, 1879. 8vo. pamphlet. Newark: 1880. E. Williams, Secretary.

Pennsylvania Horticultural Society. Catalogue of the Library. 8vo. pamphlet. Philadelphia: 1850. J. E. Mitchell.

Georgia Horticultural Society. Proceedings at the Fifth Annual Meeting, at Atlanta, August 3 and 4, 1880. 8vo. pamphlet. Atlanta: 1880. T. L. Kinsey, Secretary.

Ohio Horticultural Society. Thirteenth Annual Report, for 1879–80. 8vo. pamphlet. Columbus: 1880. George W. Campbell, Treasurer.

Illinois Horticultural Society. Transactions for the years 1878 and 1879. New series, Vols. 12 and 13. 2 vols. 8vo. Chicago: 1879, '80. O. B. Galusha, Secretary.

Indiana Horticultural Society. Transactions for 1873. 8 vo. Lafayette: 1873. W. D. Schooley. Transactions for 1876 and 1878. 2 vols. 8vo. Indianapolis: 1877, 1879. D. E. Hoffman.

Iowa Horticultural Society. Transactions for 1869, G. C. Brackett; 1876, R. Manning, 1872, 1877, and 1878; C. L. Watrous, President. 1 pamphlet and 4 vols. Des Moines: 1870, '73, '77, '78, '79.

Missouri State Board of Agriculture, and Missouri Horticultural Society. Reports for 1879. 8vo. pamphlet. Jefferson City: 1880. Norman J. Colman, President of the Horticultural Society.

Kansas Horticultural Society. Report for 1879, with the Proceedings of Division, County, and Local Societies. 8vo. Portraits and wood-cuts. Topeka: 1880. G. C. Brackett, Secretary.

Montreal Horticultural Society and Fruit Growers' Association of the Province of Quebec. Third Report, 1877. L. A. H. Latour. Fifth Report, 1879. Henry S. Evans, Secretary. 2 pamphlets. 8vo. Montreal: 1878, 1880.

Maine Pomological Society. Fifth and Sixth Reports of the Secretary for 1877 and 1878. 2 pamphlets. 8vo. Augusta: 1878, '79. George B. Sawyer, Secretary.

Pennsylvania Fruit Growers' Society. Reports for 1867, '70, '71, '72, '76, '77, '78, '79. 1 vol. and six pamphlets, 8vo. Plates. E. B. Engle, Secretary. Harrisburg: 1870, '71, '73, '76, '78, '79.

Michigan Pomological Society. Ninth Annual Report, for 1879. 8vo. Lansing: 1880. Charles W. Garfield, Secretary.

Ontario Fruit Growers' Association. Report for 1879, with the Report of the Ontario Entomological Society for 1879. Large 8vo. pamphlet. Wood-cuts of insects. Toronto: 1880.

Worcester Commission of Public Grounds. Report for 1879. 8vo. pamphlet. Edward W. Lincoln, Secretary.

Baltimore Park Commission. Twelfth and Twentieth Annual Reports for 1871 and 1879. 2 pamphlets. 8vo. With Plans of Parks. Baltimore: 1872, 1880. The Commission.

United States Department of Agriculture. Report of the Commissioner for 1878. 8vo. Plates. Washington: 1879. William G. Le Duc, Commissioner.

Maine Board of Agriculture. Twenty-third Annual Report of the Secretary, for 1878. 8vo. Augusta: 1879. Z. A. Gilbert, Secretary.

Massachusetts Board of Agriculture. Twenty-seventh Report, for 1879. 8vo. Boston: 1880. Charles L. Flint, Secretary.

Connecticut Board of Agriculture. Thirteenth Annual Report, for 1879–80. 8vo. Hartford: 1880. T. S. Gold, Secretary.

New Jersey Board of Agriculture. Seventh Annual Report, for 1879. 8vo. pamphlet. Two copies. P. T. Quinn, Secretary.

Pennsylvania Board of Agriculture. Tenth Quarterly Report, for September, October, and November, 1880. 8vo. pamphlet. Harrisburg: 1880. Thomas J. Edge, Secretary.

Indiana State Board of Agriculture. Twenty-ninth Annual Report. 8vo. Indianapolis: 1879. Alexander Heron, Secretary.

Kansas State Board of Agriculture. Quarterly Report, September, 1879. 8vo. pamphlet. Alfred Gray, Secretary.

Essex Agricultural Society. Transactions for 1879. 8vo. pamphlet. Salem: 1879. Charles P. Preston, Secretary.

Low, David W. The Pioneer Industries of Essex County: Planting and Fishing, an Annual Address before the Essex Agricultural Society at their Fifty-eighth Annual Exhibition, Lynn, September 28 and 29, 1880. 8vo. pamphlet. Salem: 1880. The Author.

Maine College of Agriculture and the Mechanic Arts. Annual Reports of the Trustees, President, Farm Superintendent, and Treasurer, Orono, 1879. 8vo. pamphlet. Augusta: 1879.

Beal, Professor W. J. Report of the Professor of Botany and Horticulture in Michigan Agricultural College for 1880. 8vo. pamphlet. 1880. The Author.

——— ——— ———. Experiments and other work of the Horticultural Department of Michigan Agricultural College. 8vo. pamphlet. The Author.

Iowa Agricultural College. Eighth Biennial Report, 1878 and 1879. 8vo. pamphlet. Des Moines, 1880. Professor C. E. Bessey.

Sturtevant, E. Lewis, M. D. Some Thoughts and Facts concerning the Food of Man. 8vo. pamphlet. 1880. The Author.

——— ——— ———. Indian Corn. 8vo. pamphlet. Albany: 1880. The Author.

Killebrew, J. B. Sheep Husbandry. 8vo. pamphlet. Nashville: 1880. The Author.

Boston Society of Natural History. Proceedings. Vol. 20, Part 2. November, 1878, to April, 1879. 8vo. pamphlet. Boston: 1879. Memoirs. Vol. 3, Part 1, No. 3. 4to. pamphlet. Boston: 1879. The Society.

Hyatt, Alpheus, Custodian. General Guide to the Museum of the Boston Society of Natural History. I. Introduction. 12mo. pamphlet, with plans of the Museum. Boston: 1880. The Society.

A Brief Account of some of the Scientific Institutions of Boston and Vicinity. Prepared by the Local Committee of the American Association for the Advancement of Science, for distribution to the members of the Association, at the Boston Meeting, August, 1880. 8vo. pamphlet. 1880. Samuel H. Scudder.

St. Louis Academy of Science. Transactions. Vol. 4, No. 1. 8vo. pamphlet. 3 plates. St. Louis: 1880.

Indiana Department of Statistics and Geology. First Annual Report, 1879. 8vo. Indianapolis: 1880. D. E. Hoffmann.

Massachusetts Institute of Technology. Fifteenth Annual Catalogue. 8vo. pamphlet. Boston: 1880. R. H. Richards, Secretary.

United States Commissioner of Education. Reports for 1876, '77, '78. Three vols. 8vo. Washington: 1878, '79, '80. Hon. John Eaton, Commissioner.

Massachusetts State Library. Catalogue. Royal 8vo. Boston: 1880. John W. Dickinson, Librarian.

Astor Library, New York. Thirty-first Annual Report of the Trustees, 1879. 8vo. pamphlet. Albany: 1880. R. Little, Superintendent.

Peabody Institute, Peabody, Mass. Twenty-eighth Annual Report of the Trustees. 8vo. pamphlet. Peabody: 1880.

Hudson, Charles. History of the Town of Lexington, Massachusetts, with a Genealogical Register of Lexington Families. 8vo., portraits and wood-cuts. Boston: 1868. Charles O. Whitmore.

American Antiquarian Society. Proceedings, No. 74, October, 1879. 8vo. pamphlet. Worcester: 1880. The Society.

New England Historic Genealogical Society. Address of Hon. Marshall P. Wilder, President, and other Proceedings at the Annual Meeting, January 7, 1880. 8vo. pamphlet. Boston: 1880. Hon. Marshall P. Wilder.

The Boston Transcript's Fiftieth Birthday. Small 4to., wood-cuts. Boston: 1880. [Privately printed.] The Transcript Company.

Periodicals Taken.

English. — Gardeners' Chronicle.
Gardener's Magazine.
Journal of Horticulture and Cottage Gardener.
The Garden.
Gardening Illustrated.
Curtis's Botanical Magazine.
Floral Magazine.
Florist and Pomologist.
Floral World.
Journal of the Linnean Society.
Journal of Botany.
Country Gentleman's Magazine.
Farmer's Magazine.
Journal of the Royal Agricultural Society.
Journal of Forestry.

French. — Revue Horticole.
Revue des Eaux et Forêts.

Belgian. — Illustration Horticole.
Flore des Serres.

Belgique Horticole.
Revue de l' Horticulture, Belge et Étrangère.
GERMAN. — Botanische Zeitung.
Gartenflora.
AMERICAN.— Country Gentleman.

PERIODICALS PRESENTED.

New England Farmer.
Massachusetts Ploughman.
American Cultivator.
American Agriculturist.
Gardener's Monthly,
American Entomologist.
Vick's Illustrated Monthly Magazine.
Canadian Horticulturist.
Botanical Index.
Bulletin de la Société Centrale d' Horticulture du Départment de la Seine Inférieure.
Bulletino della R. Società Toscana di Orticultura.
Semi-Tropic Californian.
California Horticulturist.
Southern California Horticulturist.
American Rural Home.
Maine Farmer.
Prairie Farmer.
Maryland Farmer.
Bulletin of the Torrey Botanical Club.
Botanical Gazette.
Rhode Island Press.
Boston Evening Transcript.
Boston Daily Globe.
Daily Evening Traveller.
Boston Morning Journal.
Boston Daily Advertiser.
The Nursery.
The Cottage Hearth.

TREASURER'S REPORT,

FOR THE YEAR 1880.

ITEMS OF INCOME.

Balance of Cash on hand,	$201 88	
Received for Rent of Stores,	9,144 40	
" " " Halls,	11,033 32	
" " Admissions and Assessments,	878 00	
" from Mount Auburn,	3,255 56	
" " three Exhibitions,	523 50	
" " Sale of History,	500 00	
" " Sundries,	19 20	
Interest on Bonds C. B. & Q. R. R.,	105 00	
		$25,660 86

ITEMS OF EXPENDITURE.

Salaries,	$2,675 00	
Labor,	609 90	
Incidentals,	99 86	
Heating and Water (less paid by tenants),	491 59	
Gas,	1,248 85	
Furniture, Repairs, and Fixtures,	573 94	
Repairs on Building,	381 62	
Taxes,	3,457 71	
Library accessions (Stickney fund),	702 56	
" " (Periodicals and Binding),	184 01	
Expenses of three Exhibitions,	456 37	
Prizes for 1879,	1,153 50	
" " 1880, (deposited for),	3,000 00	
Committee of Arrangements,	234 00	
" " Publication and Discussion,	65 00	
Amounts carried forward,	$15,333 91	$25,660 86

Amounts brought forward,	$15,333 91	$25,660 86
Publication of History,	1,200 00	
Printing,	524 66	
Stationery and Postage,	177 86	
Interest,	3,960 00	
Legal Services,	30 00	
Insurance,	759 37	
Balance carried to new account,	3,675 06	
		$25,660 86

BOSTON, January 13, 1881.

E. W. BUSWELL, *Treasurer:*

We have examined the above account and found it correct, and the balance of cash on hand, three thousand six hundred and seventy-five 6-100 dollars, as stated.

C. O. WHITMORE,
H. H. HUNNEWELL,
B. P. CHENEY,
} *Finance Committee.*

ASSETS AND LIABILITIES.

ASSETS.

Real Estate, Furniture, and Exhibition Ware, costing		$256,585 56
Library last year,	$18,959 67	
Added this year,	886 57	
		19,846 24
Bonds of C. B. & Q. R. R. par value,		1,500 00
		$277,931 80
Stereotype and steel plates and copies of History at cost,		700 00
Cash on hand,		3,675 06
		$282,306 86

LIABILITIES.

Mortgage debt at 5½ per cent., payable September, 1883,	$60,000 00	
Loan without interest, payable to Harvard College in 1899,	12,000 00	
Note to Massachusetts National Bank,	12,000 00	
		$84,000 00
Balance of assets over liabilities,		$198,306 86

By last report our members numbered:			
Life,		563	
Added,		15	
		578	
Deceased,		6	
		572	
Annual,	294		
Added,	6		
	300		
Deceased,	6		
Withdrawn,	1		
Discontinued,	22		
	29		
	271		
			843

Income from the above:	
15 Life Members,	$450 00
6 Annual,	60 00
184 Assessments,	368 00
	$878 00

By my last report was shown an unpaid balance of the prizes for the preceding year. That has been paid, and a sum deposited sufficient to meet those of the year now closed. The amount charged to the publication of the History, includes the payment of a note given to the Publication Committee, to cover an appropriation made last year.

The hope I expressed in my last report, of an increase in the rentals of the halls has been fully met; and the same may be said of the stores.

Our proportion from Mount Auburn is larger than last year, while our expenditures have not been materially increased. This leaves us a larger surplus than for several preceding years, which might properly be applied to the reduction of our debt, but for the necessity which exists for repairs on the building. These have become imperative, and to be properly made, will require a larger expenditure than we can now command; this, too, without any alterations in the interior, so strongly recommended by the President. The halls have, by much use, become unsuitable for the

better class of occupants, and require renovation. The library room also needs painting and the furniture needs repairs.

The stores are now rented so as to promise no increase of rent, and we shall be fortunate if in the coming year, we realize from the halls anything like the revenue now reported. The amount charged to the previous account is that actually paid; the amount awarded being very generally drawn. Mr. Hunnewell, as has been his custom, has appropriated his awards to special prizes, and a very few, of trifling amount, remain undrawn.

During the year we have paid all our current expenses, including the prizes awarded, say, . . .	$3,000 00
And have paid a balance of 1879 prizes, . .	1,153 00
And on the History over receipts, ...	700 00
And an increase of taxes, ...	573 00
Insurance for five years, ...	759 00
And have a balance in cash exceeding that at the commencement of the year, of	3,474 00
This amount, ...	9,659 00
Less an increased sum from Mt. Auburn, of . .	1,043 00
Shows a net increase in receipts of . . . over that of last year.	$8,616 00

E. W. BUSWELL, *Treasurer.*

Dr. *Massachusetts Horticultural Society, in account with the Proprietors of the Cemetery of Mt. Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending Deeember 31st, 1880.

Cost of filling up and improving land at Mt. Auburn, for the year ending December 31, 1880; the Massachusetts Horticultural Society being charged with their proportion of the same:			By Sales in January,	$515 00
Grading Swan and Magnolia Avenues,	$482 25		" " " February,	1,115 00
" Pearl and Crystal Avenues,	2,205 50		" " " March,	1,552 00
One-quarter of	$2,687 75	$671 94	" " " April,	1,337 50
Balance due Massachusetts Horticultural Society,		3,255 56	" " " May,	1,442 75
			" " " June,	3,619 00
			" " " July,	1,728 00
			" " " August,	635 00
			" " " September,	305 00
			" " " October,	2,059 75
			" " " November,	2,100 00
			" " " December,	338 00
			Net amount of receipts from Receiving Tomb,	418 00
				$17,165 00
			Less paid for graves in public lots, repurchased,	55 00
				$17,110 00
			Deduct for annual expenses,	1,400 00
			Mass. Horticultural Society, one-fourth part of	$15,710 00
		$3,927 50		$3,927,50

E. & O. E.

H. B. MACKINTOSH, *Treasurer.*

December 31, 1880.

MASSACHUSETTS HORTICULTURAL SOCIETY,

To THE PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN, *Dr.*

For one-fourth part of the following expenditures for grading new lands for sale, during 1880:

Swan and Magnolia Avenues.

60 days, men,	$120 00	
103½ days, man and horse,	362 25	
		$482 25

Pearl and Crystal Avenues.

527 days, men,	1,054 00	
329 days, man and horse,	1,151 50	
		2,205 50
		$2,687 75
One-fourth part,		671 94

MOUNT AUBURN, December 31, 1880. J. W. LOVERING, *Supt.*

I certify the foregoing to be a true copy of accounts of improvements for the year 1880, rendered by the Superintendent.

H. B. MACKINTOSH, *Treasurer.*

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1881.

President.

FRANCIS B. HAYES, of Boston.

Vice-Presidents.

JOHN B. MOORE, of Concord.
JOHN CUMMINGS, of Woburn.
J. WARREN MERRILL, of Cambridge.
BENJAMIN G. SMITH, of Cambridge.

Treasurer and Superintendent of the Building.*

GEORGE W. FOWLE, of Boston.

Secretary and Librarian.

ROBERT MANNING, of Salem.†

Recording Secretary.

ROBERT MANNING, of Salem.

Professor of Botany and Vegetable Physiology.

JOHN ROBINSON, of Salem.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Standing Committees.

Executive.

THE PRESIDENT, FRANCIS B. HAYES, Chairman.
THE EX-PRESIDENTS, MARSHALL P. WILDER, CHARLES M. HOVEY, JAMES F. C. HYDE, WILLIAM C. STRONG, FRANCIS PARKMAN, WILLIAM GRAY, JR.; CHAIRMAN OF FINANCE COMMITTEE, C. O. WHITMORE; F. L. AMES, CHARLES H. B. BRECK, JOHN C. HOVEY, HENRY P. WALCOTT.

---

* Ed. W. Buswell held the office of Treasurer until June, when he resigned and was succeeded by Mr. Fowle.

† Communications for the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

Finance.

CHARLES O. WHITMORE, CHAIRMAN.
H. HOLLIS HUNNEWELL. FRANCIS B. HAYES.

Publication and Discussion.

BENJAMIN G. SMITH, CHAIRMAN.
E. LEWIS STURTEVANT. JOHN B. MOORE.

Establishing Prizes.

CHAIRMAN OF COMMITTEE ON FRUITS, CHAIRMAN;
CHAIRMEN OF COMMITTEES ON FLOWERS, VEGETABLES, AND GARDENS, *EX OFFICIIS;* C. M. ATKINSON, P. BROWN HOVEY, FEARING BURR.

Library.

WILLIAM E. ENDICOTT, CHAIRMAN.
THE PROFESSOR OF BOTANY AND HORTICULTURAL PHYSIOLOGY AND THE PROFESSOR OF ENTOMOLOGY, *EX OFFICIIS;*
HENRY P. WALCOTT. FRANCIS H. APPLETON.
J. D. W. FRENCH. ROBERT MANNING.

Gardens.

JOHN G. BARKER, CHAIRMAN.
CHAIRMEN OF COMMITTEES ON FRUITS, FLOWERS, AND VEGETABLES, *EX OFFICIIS;* GEORGE S. HARWOOD, HENRY ROSS, JOHN C. HOVEY.

Fruit.

E. W. WOOD, CHAIRMAN.

P. BROWN HOVEY.	CHARLES F. CURTIS.	O. B. HADWEN.
BENJAMIN G. SMITH.	J. W. MANNING.	WARREN FENNO.

Plants and Flowers.

WILLIAM H. SPOONER, CHAIRMAN.

E. H. HITCHINGS.	F. L. HARRIS.	CHARLES W. ROSS.
PATRICK NORTON.	JAMES CARTWRIGHT.	J. H. WOODFORD.

Vegetables.

CHARLES N. BRACKETT, CHAIRMAN.

JOSIAH CROSBY.	GEORGE W. PIERCE.	CHARLES E. GRANT.
WALTER RUSSELL.	SAMUEL HARTWELL.	M. W. CHADBOURNE.

Committee of Arrangements.

CHARLES H. B. BRECK, CHAIRMAN.
CHAIRMEN OF COMMITTEES ON FRUITS, FLOWERS, VEGETABLES, AND GARDENS, *EX OFFICIIS;*

JOHN C. HOVEY.	C. M. ATKINSON.	JAMES COMLEY.
HERVEY DAVIS.	CHARLES H. HOVEY.	WILLIAM H. HALLIDAY.
CHARLES F. CURTIS.		JOSEPH H. WOODFORD.

MEMBERS FOR LIFE.

Change of residence, or any inaccuracies, should be promptly reported to the Secretary.

Adams, George E.,	Medford.	Beal, Alexander,	Dorchester.
Albro, Charles,	Taunton.	Beckford, D. R., Jr.,	Dedham.
Alger, R. F.,	Hinsdale.	Bell, Joseph H.,	Quincy.
Ames, F. L.,	North Easton.	Bemis, Emery,	Grantville.
Ames, Frank M.,	Canton.	Berry, James,	Boston.
Ames, George,	Boston.	Bickford, Weare D.,	Allston.
Ames, P. Adams,	"	Birchard, Charles,	Arlington.
Amory, Charles,	"	Black, James W.,	Boston.
Amory Frederick,	Brookline.	Blagg, Samuel,	Newbern, N. C.
Amory, James S.,	Boston,	Blanchard, J. W.,	Boston.
Anderson, Alexander,	Hingham.	Blaney, Henry,	Brookline.
Andrews, Charles L.,	Swampscott.	Blinn, R. D.,	Lexington.
Andrews, Frank W.,	Boston.	Bocher, Ferdinand,	Boston.
Andros, Milton,	Brookline.	Bockus, Charles E.,	Dorchester.
Appleton, Edward,	Reading.	Bond, George W.,	Boston.
Appleton, Francis H.,	Peabody.	Borland, John N ,	New London, Ct.
Appleton, Wm. S.,	Boston.	Botume, John,	Stoneham.
Atkins, Elisha,	Belmont.	Bouvé, Thomas T.,	Boston.
Avery, Edward,	Boston.	Bowditch, Azell C.,	Somerville.
Ayer, Adams,	"	Bowditch, J. Ingersoll,	Boston.
Ayling, Isaac,	"	Bowditch, Wm. E.,	"
		Bowker, William H.,	"
Bacon, George,	Brookline.	Brackett, Cephas H.,	Brighton.
Bailey, Edwin C.,	Concord, N. H.	Brackett, Charles N.,	Newton.
Baker, William E.,	Boston.	Bradish, Levi J.,	Boston.
Bancroft, John C.,	Milton,	Bragg, Samuel, A. B.,	Mattapan.
Banfield, Francis L.,	Boston.	Breed, Andrews,	Lancaster.
Barnard, Rev. C. F.,	"	Breed, Henry A.,	Lynn.
Barnard, James M.,	"	Bresee, Albert,	Hortonville, Vt.
Barnard, Robert M.,	Everett.	Brewer, John Reed,	Boston.
Barnes, Walter S.,	Somerville.	Brewer, Otis,	"
Barnes, William H.,	Boston.	Brigham, William T.,	"
Barney, Levi C.,	"	Bright, William E.,	Waltham.
Barratt, James,	Cambridge.	Brimmer, Martin,	Boston.
Barrows, Thomas,	Dedham.	Brintnall, Benjamin,	"
Bartlett, Edmund,	Newburyport.	Brooks, Francis,	Medford.
Bates, Amos,	Hingham.	Brooks, J. W.,	Milton.
Bates, Caleb,	Kingston.	Brown, Charles E.,	Yarmouth, N.S.
Bayley, John P.,	Boston.	Brown, Edward J.,	Brookline.

Brown, G. Barnard,	Boston.	Cleary, Lawrence,	West Roxbury.
Brown, George B.,	"	Clement, Asa,	Dracut.
Brown, Jacob,	Woburn.	Cleveland, Ira,	Dedham.
Brownell, E. S.,	Essex Junc., Vt.	Cobb, Albert A.,	Brookline.
Bruce, Nathaniel F.,	Stoneham.	Coburn, Isaac E.,	Everett.
Bullard, William S.,	Boston.	Codman, James M.,	Brookline.
Burnett, Joseph,	Southborough.	Codman, Ogden,	Lincoln.
Burnham, T. O. H. P.,	Boston.	Coffin, G. Winthrop,	West Roxbury.
Burr, Fearing,	Hingham.	Coffin, William E.,	Boston.
Burr, Matthew H.,	"	Converse, E. S.,	Malden.
Buswell, Edwin W.,	Boston.	Converse, Parker L.,	Woburn.
Buswell, Frank E.,	"	Coolidge, Joshua,	Watertown.
Butler, Aaron,	Wakefield.	Copeland, Franklin,	West Dedham.
Butterfield, Wm. P.,	Arlington.	Cox, George P.,	Malden.
		Coy, Samuel I.,	Boston.
Cadness, John,	Flushing, N. Y.	Craft, George,	Brookline.
Cains, William,	South Boston.	Crocker, George O.,	New Bedford.
Calder, Augustus P.,	Boston.	Crocker, Uriel,	Boston.
Capen, John,	"	Crosby, Josiah,	Arlington.
Carlton, Samuel A.,	Somerville.	Crowell, Philander,	Chelsea.
Carruth, Charles,	Boston.	Crowell, Randall H.,	"
Carruth, Nathan,	Dorchester.	Cummings, John,	Woburn,
Carter, Miss Sabra,	Wilmington.	Curtis, Charles F.,	Jamaica Plain.
Chamberlain, C. W.,	Arlington.	Curtis, George S.,	" "
Chapin, N. G.,	Brookline.	Cushing, John G.,	Boston.
Chapman, Edward,	Arlington.	Cushing, Robert M.,	"
Chase, A. J.,	Lynn.		
Chase, Daniel E.,	Somerville.	Daggett, Henry C.,	Boston.
Chase, Hezekiah S.,	Boston.	Damon, Samuel G.,	Arlington.
Chase, William M.,	Worcester.	Dana, Charles B.,	Brookline.
Cheney, Benjamin P.,	Boston.	Darling, Charles K.,	Boston.
Child, Francis J.,	Cambridge.	Davenport, Edward,	Dorchester.
Child, William C.,	Medford.	Davenport, Geo. E.,	Boston.
Childs, Francis,	Charlestown.	Davenport, Henry,	"
Childs, N. R.,	Dorchester.	Davis, Curtis,	Cambridge.
Claflin, Henry,	Brighton.	Davis, Hervey,	Cambridgeport.
Claflin, William,	Newton.	Dawson, Jackson,	West Roxbury.
Clapp, Edward B.,	Dorchester.	Deblois, Stephen G.,	Boston.
Clapp, E. W.,	Walpole,	Denny, Clarence H.,	"
Clapp, James H.,	Dorchester.	Denny, R. S.,	Dorchester.
Clapp, Lemuel,	"	Denton, Eben,	Braintree.
Clapp, William C.,	"	Dewson, Francis A.,	Boston.
Clark, Orus,	Boston.	Dexter, F. Gordon,	"
Clark, William S.,	Amherst.	Dickerman, Geo. H.,	Somerville.
Clark, W. L.,	Neponset.	Dickinson, Alex.,	Cambridgeport.
Clarke, Miss Cora H.,	Jamaica Plain.	Dike, Charles C.,	Stoneham.
Clay, Henry,	Dorchester.	Dix, Joseph,	Boston.

Dorr, George,	Dorchester.	Gillard, William,	Boston.
Dove, George W. W.,	Andover.	Gilson, F. Howard,	Reading.
Downer, Samuel,	Dorchester.	Glover, Albert,	Boston.
Durant, Henry F.,	Boston.	Glover, Joseph B.,	"
Durant, William,	"	Goddard, A. Warren,	Brookline.
Durfee, Mrs. F. B.,	Fall River.	Goddard, Mrs. M. T.,	Newton.
Durfee, George B.,	" "	Gorham, James L.,	Jamaica Plain.
Dutcher, F. J.,	Hopedale.	Gould, Francis,	Arlington.
D'Wolf, John L.,	Boston.	Gould, Samuel,	Boston.
		Gray, James,	Wellesley.
Eaton, Horace,	Quincy.	Gregory, J. J. H.,	Marblehead.
Eldridge, Azariah,	Yarmouthport.	Greig, George,	Newton.
Eldridge, E. H.,	Boston.	Grinnell, Joseph,	New Bedford.
Ellicott, J. P.,	Jamaica Plain.	Groom, Thomas,	Dorchester.
Endicott, William E.,	Canton.	Grundel, Hermann,	"
Eustis, William C.,	Hyde Park.	Guild, J. Anson,	Brookline.
Everett, George,	Concord.		
Everett, Otis,	Boston.	Hadwen, Obadiah B.,	Worcester.
Everett, William,	"	Hall, Edwin A.,	Cambridgeport.
Ewell, William,	Dorchester.	Hall, George A.,	Chelsea.
		Hall, George R.,	Boston.
Farlow, John S.,	Newton.	Hall, John R.,	"
Faxon, John,	Quincy.	Hall, Lewis,	Cambridge.
Fay, Mrs. R. L.,	Chelsea.	Hall, Stephen A.,	Revere.
Fenno, J. B.,	Boston.	Hall, William F.,	Brookline.
Fewkes, Edwin,	Newton High'ds.	Halliday, William H.,	Boston.
Fillebrown, John,	Arlington.	Hammond, Gard. G.,	"
Fisher, James,	Boston.	Hammond, Samuel,	"
Fisher, Warren,	"	Hanson, P. G.,	Woburn.
Flagg, Augustus,	"	Harding, C. L.,	Cambridge.
Fleming, Edwin,	West Newton.	Harding, George W.,	Dorchester.
Fletcher, John W.,	Chelsea.	Harding, Lewis B.,	Boston.
Flint, Charles L.,	Boston.	Harding, W. C.,	"
Flint, David B.,	Watertown.	Hardy, F. D., Jr.,	Cambridgeport.
Flynt, William N.,	Monson.	Harris, Charles,	Cambridge.
Foster, John H.,	Boston.	Hastings, Edm. T.,	Boston.
Fowle, William B.,	Auburndale.	Hathaway, Seth W.,	Marblehead.
Freeland, Chas. Wm.,	Boston.	Haughton, James,	Boston.
Freeman, Abraham,	Dorchester.	Haven, Alfred W.,	Portsm'th, N.H.
French, Jonathan,	Boston.	Hayes, Daniel F.,	Exeter, N. H.
French, J. D. W.,	"	Hayes, Francis B.,	Boston.
Fuller, Henry Weld,	"	Hazeltine, Hazen,	"
		Head, Charles D.,	Brookline.
Galvin, John,	West Roxbury.	Hilbourn, A. J.,	Chelsea.
Gardner, Henry N.,	Belmont.	Hill, George,	Arlington.
Gardner, John L.,	Brookline.	Hill, John,	Stoneham.
Gibbs, Wolcott,	Cambridge.	Hilton, William,	Boston.

Hitchings, E. H.,	Boston.	Keyes, George,	Concord.
Hodgkins, John E.,	Chelsea.	Kidder, Henry P.,	Boston.
Hollis, John W.,	Brighton.	Kidder, Nath'l T.,	"
Holt, Mrs. S. A.,	Winchester.	Kimball, A. P.,	"
Hooper, Robert C.,	Boston.	King, Franklin,	Dorchester.
Hooper, Thomas,	Bridgewater.	King, William S.,	Boston.
Horner, Mrs. C. N. S.,	Georgetown.	Kingman, Abner A.,	Brookline.
Hovey, Charles H.,	Cambridge.	Kingman, C. D.,	Middleborough.
Hovey, Charles M.,	"	Kinsley, Lyman,	Cambridgeport.
Hovey, John C.,	Cambridgeport.	Kittredge, E. A.,	Boston.
Hovey, P. Brown,	"		
Howe, George,	Boston.	Lamb, Thomas,	Boston.
Howland, John, Jr.,	New Bedford.	Lancaster, Charles B.,	Newton.
Hubbard, Charles T.,	Boston.	Lawrence, Amos A.,	Brookline.
Hubbard, G. G.,	Cambridge.	Lawrence, Edward,	Charlestown.
Hubbard, J. C.,	Boston.	Lawrence, James,	Boston.
Hubbard, William J.,	"	Lawrence, James,	Groton.
Huckins, J. W.,	"	Lawrence, John,	Boston.
Humphrey, F. J..	Dorchester.	Lawson, Peter,	Lowell.
Humphrey, G. W.,	Dedham.	Leavens, S. Davis,	Boston.
Hunneman, Jos. H.,	Boston.	Lee, Henry,	"
Hunnewell, H. H.,	Wellesley.	Leeson, Joseph R.,	Newton Centre.
Hunt, Franklin,	Boston.	Lemme, Frederick,	Natick.
Hunt, Moses,	"	Leuchars, Robert B.,	Boston.
Hunt, William H.,	Concord.	Lewis, A. S.,	Framingham.
Hyde, James F. C.,	Newton.	Lewis, William G.,	"
		Lincoln, George,	Hingham.
Inches, Henderson,	Boston.	Locke, William H.,	Belmont.
Inches, Herman B.,	"	Lodge, Giles H.,	Swampscott.
		Loftus, John P.,	Boston.
Jackson, Abraham,	Boston.	Loomis, Jason B.,	Chelsea.
Janvrin, William S.,	Revere.	Lord, George C.,	Newton.
Jeffries, John, Jr.,	Boston.	Loring, Alfred,	South Hingham.
Jenks, Charles W.,	"	Loring, Caleb W.,	Boston.
Joyce, Mrs. E. S.,	Medford.	Loring, George B.,	Salem.
		Lovett, George L.,	Boston.
Kakas, Edward,	Medford.	Low, Ariel,	"
Kelley, E. G.,	Newburyport.	Lowder, John,	Watertown.
Kendall, D. S.,	Woodstock, Ont.	Lowell, Augustus,	Boston.
Kendall, Edward,	Cambridgeport.	Luke, Elijah H.,	Cambridgeport.
Kendall, J. R.,	Woburn.	Lumb, William,	Boston.
Kendrick, Mrs. H. P.,	Allston.	Lunt, Charles H.,	Jamaica Plain.
Kennard, Charles W.,	Boston.	Lyman, Theodore,	Brookline.
Kennedy, George G.,	"	Lyon, Henry,	Charlestown.
Kenney, John M.,	Wareham.		
Kent, John,	Charlestown.	Mahoney, John,	Boston.
Keyes, E. W.,	Denver, Col.	Mann, James F.,	Cambridge.

Mann, Jonathan,	Cambridge.	Parker, Augustus,	Boston.
Manning, Jacob W.,	Reading.	Parker, William A.,	"
Manning, Mrs. L. B.,	"	Parkman, Francis,	Jamaica Plain.
Manning, Robert,	Salem.	Partridge, Henry,	Dunkirk, N. Y.
Mansfield, Henry S.,	Blackstone.	Partridge, Horace,	Somerville.
Marshall, Frederick,	Everett.	Paul, Alfred W.,	Dighton.
Martin, Darius A.,	Chelsea.	Pearce, John,	West Roxbury.
Martin, John S.,	Boston.	Peck, O. H.,	Franklin.
Matthews, Nathan,	"	Peck, W. G.,	Arlington.
McCarty, Timothy,	"	Penniman, A. P.,	Waltham.
McClure, John,	Revere.	Perkins, Augustus T.,	Boston.
Merriam, M. H.,	Lexington.	Perkins, Edward N.,	Brookline.
Merrifield, W. T.,	Worcester.	Perkins, William P.,	"
Miller, Erasmus D.,	Dorchester.	Perry, George W.,	Malden.
Mills, Charles H.,	Boston.	Philbrick, William D.,	Newton Centre.
Milmore, Martin,	"	Phillips, John C.,	Boston.
Minton, James,	Dorchester.	Pierce, George W.,	Everett.
Mixter, Charles,	Boston.	Pierce, Henry L.,	Dorchester.
Moore, John B.,	Concord.	Pierce, Samuel B ,	"
Morrill, Joseph, Jr.,	Boston.	Poole, Benjamin C.,	Chelsea.
Morse, Samuel F.,	"	Poor, John R.,	Somerville.
Morse, Sidney B ,	"	Potter, Joseph S.,	Arlington.
Motley, Thomas,	West Roxbury.	Prang, Louis,	Boston.
Mudge, E. R.,	Swampscott.	Pratt, Robert M.,	"
Mudge, George A.,	Portsm'th, N.H.	Pratt, William,	Winchester.
Mudge, George W.,	Lynn.	Pray, Mark W.,	Malden.
Munroe, Otis,	Boston.	Prescott, C. H.,	Cornwallis, N.S.
		Prescott, Eben C.,	Boston.
Needham, Daniel,	Groton.	Prescott, W. G.,	"
Newhall, George,	Dorchester.	Prescott, William G.,	Quincy.
Newman, J. R.,	Winchester.	Preston, George H.,	Boston.
Newton, Rev. W. W.,	Boston.	Preston, John,	Dorchester.
Nichols, Mrs. F.,	Dorchester.	Pringle, Cyrus G.,	Charlotte, Vt.
Nickerson, Alfred W.,	Dedham.	Proctor, Thomas P.,	West Roxbury.
Nourse, Benjamin F.,	Cambridgeport.	Prouty, Gardner.	Littleton.
Nourse, Benjamin F.,	Boston.	Putnam, Joshua H.	Brookline.
Oakman, Hiram A.,	No. Marshfield	Ramsay, A. H.,	Cambridge.
Osgood, Jas. Ripley,	Boston.	Rand, Miss E. L.,	NewtonHighl'ds
Otis, Theodore C.,	"	Rand, Edward S.,	Boston.
Oxnard, George D.,	"	Rand, Oliver J.,	Cambridgeport.
		Rawson, W. W.,	Arlington.
Packer, Charles H.,	Boston.	Rayner, John J.,	Lexington.
Page, Thomas,	"	Reed, George W.,	Boston.
Paine, Robert T.,	"	Richards, John J.,	"
Palmer, John P.,	"	Richards, William B.,	"
Park, John C.,	Somerville.	Richardson, C. E.,	Philadelphia.

Richardson, Geo. C.,	Cambridge.	Spaulding, M. D.,	Boston.
Robbins, I. Gilbert,	Boston.	Speare, Alden,	Newton Centre.
Robbins, Nathan,	Arlington.	Springall, George,	Malden.
Robeson, W. R.,	Boston.	Springer, John,	Sterling.
Robinson, J. H.,	Dorchester.	Stetson, James A.,	Quincy.
Robinson, John,	Salem.	Stetson, Nahum,	Bridgewater.
Rogers, John H.,	Boston.	Stickney, Rufus B.,	Somerville.
Ross, Henry,	Newton.	Stimpson, George,	New York.
Ross, M. Denman,	Boston.	Stimpson, H. H.,	Cambridge.
Ross, Waldo O.,	"	Stone, Amos,	Everett.
Russell, George,	Woburn.	Stone, George F.,	Newton.
Russell, Walter,	Arlington.	Stone, Phineas J.,	Charlestown.
		Story, E. Augustus,	Brighton.
Sampson, George R.,	New York.	Strong, William C.,	Newton Centre.
Sanborn, Amos C.,	Cambridgeport.	Sturgis, John H.,	Boston.
Sanford, O. S.,	Cordaville.	Sturgis, Russell, Jr.,	"
Sargent, Charles S.,	Brookline.	Sturtevant, E. Lewis,	S. Framingham.
Sargent, Ignatius,	"	Sumner, Edward,	Dedham.
Saville, Richard L.,	"	Surette, Louis A.,	Concord.
Sawyer, Timothy T.,	Charlestown.	Swain, Charles D.,	Roxbury.
Scott, Charles,	Newton.		
Scudder, C. W.,	Brookline.	Taft, John B.,	Boston.
Seaver, Nathaniel,	East Boston.	Tappan, Charles,	"
Seaver, Robert,	Jamaica Plain.	Taylor, Horace B.,	"
Shaw, C. C.,	Milford, N. H.	Thacher, Alfred C.,	Dorchester.
Shaw, S. P.,	Cambridge.	Thayer, Henry,	N. Cambridge.
Sheafe, Charles C.,	Boston.	Thayer, Nathaniel,	Boston.
Sheafe, William,	Brookline.	Thompson, S. Benton,	"
Sheldon, Oliver S.,	Milton.	Thurlow, Thomas C.,	Newburyport.
Shimmin, Charles F.,	Boston.	Tilton, Stephen W.,	Boston.
Shorey, John L.,	Lynn.	Todd, John,	Hingham.
Skinner, Francis,	Boston.	Tolman, Benjamin,	Concord.
Slack, Charles W.,	"	Tolman, Miss H. S.,	Boston.
Slack, Lewis,	Brookline.	Torrey, Everett,	Charlestown.
Smith, Benjamin G.,	Cambridge.	Turner, John M.,	Dorchester.
Smith, Calvin W.,	Grantville.	Turner, Roswell W.,	Newton.
Smith, Charles H.,	Jamaica Plain.	Turner, Royal W.,	Randolph.
Smith, Chauncy,	Cambridge.		
Smith, E. N.,	San Francisco.	Underwood, Guy C.,	Boston.
Smith, George O.,	Boston.	Upham, Henry,	Brookline.
Smith, James H.,	Needham.		
Smith, W. B.,	Boston.	Vass, William J.,	Boston.
Snow, Eben,	Cambridge.	Vinton, A. H., D. D.,	Pomfret, Conn.
Snow, Miss Salome H.,	Brunswick, Me.	Vose, Benjamin C.,	Hyde Park.
Southmayd, John K.,	Boston.		
Sparhawk, Edw'd C.,	Brighton.	Wainwright, Wm. L.,	Braintree.
Spaulding, Edward,	Jamaica Plain.	Wakefield, E. H.,	Chelsea.

Walcott, Edward,	Pawtucket.	White, Edward A.,	Boston.
Walcott, Henry P.,	Cambridge.	White, Francis A.,	Brookline.
Wales, George O.,	Braintree.	Whitely, Edward,	Cambridge.
Walker, Edw. C. R.,	Dedham.	Whiting, Nathaniel,	Brookline.
Walker, Samuel A.,	"	Whitmore, C. O.,	Boston.
Walker, T. W.,	Waltham.	Whittle, George W.,	Somerville.
Walley, Mrs. W. P.,	Boston.	Whytal, Thomas G.,	New York.
Ward, John,	Newton.	Wilbur, G. B.,	Watertown.
Wardwell, W. H.,	" Centre.	Wilcutt, Levi L.,	West Roxbury.
Ware, Benjamin P.,	Beach Bluff.	Wilder, Henry A.,	Boston.
Warren, George W.,	Boston.	Wilder, Marshall P.,	Dorchester.
Wason, Elbridge,	Brookline.	Williams, Aaron D.,	Boston.
Waters, Edwin F.,	Newton Centre.	Williams, Benj. B.,	"
Waters, George F.,	Newton.	Williams, Philander,	Taunton.
Watts, Isaac,	Belmont.	Willis, George W.,	Chelsea.
Webber, Aaron D.,	Boston.	Willis, J. C.,	Boston.
Weld, Aaron D.,	West Roxbury.	Wilson, Henry W.,	South Boston.
Weld, Dr. Moses W.,	Boston.	Winship, F. Lyman,	Brighton.
Weld, Richard H.,	"	Winship, Herman,	"
Weld, William G.,	Brookline.	Woerd, Charles V.,	Waltham.
Weston, Leonard W.,	Lincoln.	Woerd, C. V., Jr.,	"
Weston, Seth,	Revere.	Wood, Luke H.,	Marlborough.
Wetherell, Leander,	Boston.	Wood, R. W.,	Jamaica Plain.
Wheelwright, A. C.,	"	Wood, William K.,	West Newton.
Whipple, John A.,	"	Woodward, Royal,	Brookline.
Whitcomb, Wm. B.,	Medford.	Wright, George C.,	West Acton.
White, Benjamin C.,	Boston.	Wrisley, Frank,	New York.

ANNUAL MEMBERS.

Abbott, S. L., M. D.,	Boston.	Burley, Edward,	Beverly.
Adams, Charles F.,	Quincy.	Burr, Charles C.,	Newton.
Adams, C. S.,	Framingham.	Butler, Edward,	Wellesley.
Allen, Andrew F.,	Arlington.		
Allen, Calvin,	Boston.	Capen, Aaron D.,	Mattapan.
Allen, Nathaniel T.,	West Newton.	Carter, Maria E.,	Woburn.
Ames, R. W.,	Boston.	Cartwright, James,	Wellesley.
Anderson, Charles J.,	Longwood.	Chadbourne, M. W.,	Watertown.
Atkinson, Chas. M.,	Brookline.	Chaffin, John C.,	Newton.
Atkinson, Edward,	"	Chapin, Gardner S.,	Arlington.
Atkinson, W. B.,	Newburyport.	Chapin, George H.,	Watertown.
		Chase, Mrs. C. B.,	Medford.
Bacon, Augustus,	Boston.	Chase, Henry L.,	Lynn.
Bacon, William,	"	Chase, Joseph S.,	Malden.
Bard, James,	Framingham.	Cheney, Amos P.,	Natick.
Barker, John G.,	Lynn.	Clark, James W.,	Framingham.
Barnes, Parker,	Dorchester.	Clark, Joseph,	Canton.
Beard, Edward L.,	Cambridge.	Clark, Joseph W.,	Dedham.
Beebe, J. Arthur,	Boston.	Cobb, Jonathan H.,	"
Bird, Charles,	Revere.	Coe, Henry F.,	West Roxbury.
Bird, John L.,	Dorchester.	Comley, James,	Lexington.
Bliss, B. K.,	New York.	Cox, James F.,	Abington.
Bolles, Matthew,	Boston.	Crafts, William A.,	Boston.
Bolles, William P.,	"	Cruickshanks, J. T.,	Natick.
Bolton, John B.,	Somerville.	Curtis, Daniel T.,	Boston.
Boott, William,	Boston.	Curtis, Joseph H.,	"
Bradlee, John T.,	"		
Breck, Charles H.,	Brighton.	Darling, Moses, Jr.,	South Boston.
Breck, Charles H. B.,	"	Davenport, A. M.,	Watertown.
Brewer, Thomas M.,	Boston.	Davis, Frederick,	Newton.
Brooks, George,	Brookline.	Davis, James,	Boston.
Brown, A. S.,	Jamaica Plain.	Davis, Thomas M.,	Cambridgeport.
Brown, Atherton T.,	Boston.	Day, George B.,	Boston.
Brown, Benjamin F.,	Charlestown.	Dean, A. J.,	"
Brown, Jona., Jr.,	Somerville.	Dolbear, Mrs. Alice J.,	Somerville.
Brown, Joseph T.,	Boston.	Doogue, William,	Boston.
Bryant, G. J. F.,	"	Duffley, Daniel,	Brookline.
Bull, E. W.,	Concord.	Dupee, James A.,	"
Bullard, Calvin,	Boston.	Dyer, Mrs. E. D.,	Eyota, Minn.

Eaton, Jacob,	Cambridgeport.	Hartwell, Samuel,	Lincoln.
Edgar, William,	Newtonville.	Harwood, George S.,	Newton.
Ewings, Luther B.,	Boston.	Haskell, Edward,	New Bedford.
		Hatch, Samuel,	Boston.
Falconer, John,	Rochester.	Hayes, John L.,	Cambridge.
Falconer, William,	Cambridge.	Hayward, Daniel H.,	No. Cambridge.
Farrier, Amasa,	Stoneham.	Hayward, George P.,	Hingham.
Farrier, Mrs. C.,	"	Hazleton, H. L.,	Boston.
Fay, Henry G.,	Brookline.	Hersey, Alfred H.,	Hingham.
Felton, Arthur W.,	West Newton.	Hersey, Edmund,	"
Fenno, Warren,	Revere.	Heustis, Warren,	Belmont.
Fletcher, Edwin,	Acton.	Hews, Albert H.,	No. Cambridge.
Foster, Joshua T.,	Medford.	Higbee, Charles H.,	Salem.
Fowle, Henry D.,	Boston.	Hill, Benjamin D.,	Peabody.
French, William E.,	"	Hill, Miss Katie A.,	Lowell.
Frost, George,	West Newton.	Hinckley, Mrs. D. F.,	Chelsea.
Frost, Stiles,	" "	Howe, Rufus,	Marlborough.
Fuller, William G.,	Stoneham.	Hubbard, Joel W.,	Boston.
Gane, Henry A.,	West Newton.	Ireland, George W.,	Somerville.
Gardiner, Claudius B.,	Newburyport.		
Gardner, John,	Dedham.	Jameson, G. W.,	East Lexington.
Garfield, Charles,	Medford.	Jones, Moses,	Brookline.
Gaut, Samuel N.,	Somerville.	Jordan, Samuel,	Yarmouth.
Gilbert, John,	Boston.		
Gilbert, Samuel,	"	Kelsey, Fred W.,	Waverly, N. Y.
Gilbert, W. A.,	Neponset.	Kendall, Jonas,	Framingham.
Gill, Mrs. E. M.,	Medford.	Kennard, Martin P.,	Brookline.
Gleason, C. W.,	Boston.	Kenrick, Miss A. C.,	Newton.
Gleason, Herbert,	Malden.		
Godbold, G. A.,	Chelsea.	Lamprell, Simon,	Marblehead.
Goddard, Thomas,	Boston.	Lang, John H. B.,	Dorchester.
Goodwin, Lester,	Brighton.	Langworthy, I. P.,	Chelsea.
Grant, Charles E.,	Boston.	Leavens, E. W.,	Malden.
Graves, Frank H.,	West Newton.	Lee, Francis H.,	Salem.
Gray, Howard,	Dorchester.	Livermore, Miss M.,	Mt. Auburn.
Gray, John C.,	Boston.	Loring, Charles G.,	Boston.
Gray, William, Jr.,	Dorchester.	Loring, John A.,	"
Gray, William, 3d,	"	Lothrop, David W.,	West Medford.
Greene, Malcolm H.,	"	Lothrop, H. A.,	Sharon.
Grew, Henry,	"	Lothrop, Thornton K.,	Boston.
Guerineau, Louis,	Malvern, Ark.	Lowell, John,	Newton.
Hall, William T.,	Revere.	Marcou, Mrs. J.,	Cambridge.
Hamlin, Delwin A.,	South Boston.	Markoe, G. F. H.,	Boston.
Harris, Miss Ellen M.,	Jamaica Plain.	May, F. W. G.,	"
Harris, Frederick L.,	South Natick.	McDermott, Andrew,	"

McIntosh, A. S., Boston.
McLaren, Anthony, Forest Hills.
Mellen, George M., Brookline.
Merrill, J. Warren, Cambridgeport.
Merrill, S. A., Danvers.
Minton, Peter J., Forest Hills.
Morandi, Francis, Malden.
Morris, Thomas D., Boston.
Morrison, Hugh, Bay View.
Morse, William A., Boston.
Morton, James H., "
Murray, Daniel D., Brookline.
Muzzey, Rev. A. B., Cambridge.

Nightingale, Crawford, Dorchester.
Norton, Michael H., Boston.
Norton, Patrick, "
Noyes, George N., Auburndale.
Nugent, James, Boston.

O'Brien, James, Jamaica Plain.
Oldreive, Richard, Newton.
Olney, Richard, West Roxbury.
Owen, John, Cambridge.

Park, William D., Boston.
Parker, Harvey D., "
Parker, John, "
Parsons, William, "
Patterson, James, Cambridge.
Payson, Samuel R., Boston.
Pettingill, Thos. S., Brookline.
Phillips, Nathaniel, Dorchester.
Pickering, Mrs. E. C., Cambridge.
Plimpton, W. P., West Newton,
Power, Charles J., S. Framingham.
Pratt, Lucias G., West Newton.
Pratt, Mrs. Mary L., Hingham.
Pratt, Samuel, Chelsea.
Prince, Thomas, Boston.
Putnam, Charles A., Salem.
Putnam, Henry W., "

Randall, Macey, Sharon.
Ranlett, S. A., Melrose.
Richards, John S., Brookline.
Richardson, E. P., Lawrence.
Richardson, Horace, Framingham.
Ridler, Charles E., Kingston.
Roberts, Edward, Hyde Park.
Rogers, John F., Cambridge.
Ross, Charles W., Newtonville.
Russell, George, Boston.

Saunders, Miss M.T., Salem.
Saville, George, Quincy.
Sawtell, J. M., Fitchburg.
Schlegel, Adam, Boston.
Scott, A. E., Lexington.
Scott, George H., Allston.
Scudder, Samuel H., Cambridge.
Shattuck, F. R., Boston.
Shedd, Abraham B., Lexington.
Shedd, Arthur B., "
Shepherd, C. W., West Newton.
Sheppard, Edwin, Lowell.
Sherman, Japhet, Medford.
Simpson, Michael H., Saxonville.
Sleeper, John S., Boston.
Snow, Eugene A., Melrose.
Southworth, Edward, Quincy.
Spooner, William H., Jamaica Plain.
Sprague, Charles J., Boston.
Squire, John P., Arlington.
Starbird, Louis D., Malden.
Stevenson, Hamilton, Woburn.
Stone, Eliphalet, Dedham.
Stone, Samuel G., Charlestown.
Story, Miss Sarah W., Brighton.
Sullivan, J. L. D., Somerville.
Swan, Charles W., Boston.

Tailby, Joseph, Wellesley.
Talbot, Josiah W., Norwood.
Tapper, Thomas, Canton.
Tobey, Miss M. B., Brookline.
Todd, Jacob, Boston.
Torrey, Bradford, "
Trautman, Martin, "
Turner, Nathaniel W., "

Underwood, Wm. J., Belmont.

Vandine, Henry, Cambridgeport.

Vinton, Mrs. C. A.,	Boston.	Whitney, Joel,	Winchester.
		Whiton, Starkes,	HinghamCentre.
Walker, Charles H.,	Chelsea.	Wilde, Hiram,	Randolph.
Walker, Joseph T.,	Boston.	Williams, Dudley,	Jamaica Plain.
Walker, William P.,	Somerville.	Wilmarth, H. D.,	" "
Washburn, E. Fred,	Neponset.	Wilson, B. Osgood,	Watertown.
Watson, David,	Malden.	Wilson, George W.,	Malden.
Webster, John,	Salem.	Wiswall, Henry M.,	Watertown.
Wellington, Chas. A.,	E. Lexington.	Wolcott, Mrs. J. W.,	Boston.
Wellington, Jos. V.,	Cambridge,	Wood, Mrs. Anna D.,	West Newton.
Wells, Benjamin T.,	Boston.	Wood, Miss C. S.,	" "
Weston, Mrs. L. P.,	Danvers.	Wood, E. W.,	" "
Wheatland, Henry,	Salem.	Woodford, Jos. H.,	Newton.
Wheeler, Miss Ann C.,	Cambridgeport.		
Wheildon, Wm. W.,	Concord.	Zirngiebel, Denys,	Needham.
White, Nelson B.,	Norwood.		

EXTRACTS FROM THE BY-LAWS.

SECTION XXVI.—Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments; and any member, having once paid an admission fee, may become a Life Member by the payment of twenty dollars in addition thereto.

SECTION XXVII.—Admission Fee and Annual Assessment.

Every subscription member, before he receives his Diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIX.—Discontinuance of Membership.

Any member who shall neglect for the space of two years to pay his annual assessment, shall cease to be a member of the Society, and the Treasurer shall erase his name from the List of Members.

The attention of Annual Members is particularly called to Section XXIX.

HONORARY MEMBERS.

A * denotes the member deceased. Correspondents of the Society and others will confer a favor by communicating to the Secretary information of the decease, change of residence, etc., of Honorary or Corresponding Members.

*Benjamin Abbott, LL. D., Exeter, N. H.
*John Abbott, Brunswick, Me.
*Hon. John Quincy Adams, LL. D., late President of the United States, Quincy.
*Prof. Louis Agassiz, Cambridge.
*William T. Aiton, late Curator of the Royal Gardens, Kew, England.
Thomas Allen, ex-President of the St. Louis Horticultural Society, St. Louis, Mo., and Pittsfield, Mass.
*Hon. Samuel Appleton, Boston.
*Hon. James Arnold, New Bedford.
*Edward Nathaniel Bancroft, M. D., late President of the Horticultural and Agricultural Society of Jamaica.
*Hon. Philip P. Barbour, Virginia.
*Don Angel Calderon de la Barca, late Spanish Minister at Washington.
*Robert Barclay, Bury Hill, Dorking, Surrey, England.
*James Beekman, New York.
*L'Abbé Berlèse, Paris.
*Nicholas Biddle, Philadelphia.
*Dr. Jacob Bigelow, Boston.
*Mrs. Lucy Bigelow, Medford.
*Le Chevalier Soulange Bodin, late Secrétaire-Général de la Société d'Horticulture de Paris.
Hon. George S. Boutwell, Groton.
*Josiah Bradlee, Boston.
*Hon. George N. Briggs, Pittsfield.
*Hon. James Buchanan, late President of the United States, Lancaster, Penn.
*Jesse Buel, late President of the Albany Horticultural Society, Albany, N. Y.
*Hon. Edmund Burke, late Commissioner of Patents, Washington, D. C.
*Augustin Pyramus de Candolle, Geneva.
Hon. Horace Capron, ex-U. S. Commissioner of Agriculture, Washington. D. C.
*Commodore Isaac Chauncey, U. S. Navy, Brooklyn, N. Y.

*Ward Chipman, late Chief Justice of New Brunswick, St. John.
*Lewis Clapier, Philadelphia.
*Hon. Henry Clay, Lexington, Ky.
H. W. S. Cleveland, Chicago, Ill.
*Admiral Sir Isaac Coffin, Bart, England.
*Zaccheus Collins, late President of the Pennsylvania Horticultural Society, Philadelphia.
*Roswell L. Colt, Paterson, New Jersey.
Caleb Cope, ex-President of the Pennsylvania Horticultural Society, Philadelphia.
*William Coxe, Burlington, N. J.
*John P. Cushing, Watertown.
*Charles W. Dabney, late U. S. Consul, Fayal, Azores.
*Hon. John Davis, LL. D., Boston.
*Sir Humphry Davy, London.
*Gen. Henry Alexander Scammel Dearborn, Roxbury.
*James Dickson, late Vice-President of the Horticultural Society of London.
*Mrs. Dorothy Dix, Boston.
*Capt. Jesse D. Elliot, U. S. Navy.
*Hon. Stephen Elliot, LL. D., Charleston, S. C.
*Hon. Henry L. Ellsworth, late Commissioner of Patents, Washington, D. C.
*Allyn Charles Evanson, late Secretary of the King's County Agricultural Society, St. John, N. B.
*Hon. Edward Everett, LL. D., Boston.
*Hon. Horace Everett, Vermont.
*F. Faldermann, late Curator of the Imperial Botanic Garden, St. Petersburg.
*Hon. Millard Fillmore, late President of the United States, Buffalo, N.Y.
*Dr. F. E. Fischer, late Professor of Botany at the Imperial Garden, St. Petersburg.
*Hon. Theodore Frelinghuysen, late President of the American Agricultural Society, New Brunswick, N. J.
*Joseph Gales, Jr., late Vice-President of the Horticultural Society, Washington, D. C.
*George Gibbs, New York.
*Stephen Girard, Philadelphia.
*Hon. Robert T. Goldsborough, Talbot County, Maryland.
*Ephraim Goodale, South Orrington, Maine.
*Mrs. Rebecca Gore, Waltham.
*Hon. John Greig, late President of the Domestic Horticultural Society, Canandaigua, N. Y.
*Mrs. Mary Griffith, Charlies Hope, N. J.
*Gen. William Henry Harrison, late President of the United States, North Bend, O.
*S. P. Hildreth, M. D., Marietta, O.
*Thomas Hopkirk, late President of the Glasgow Horticultural Society.
*David Hosack, M. D., late President of the New York Horticultural Society.

*Lewis Hunt, Huntsburg, O.
*Joseph R. Ingersoll, late President of the Pennsylvania Horticultural Society, Philadelphia.
*Gen. Andrew Jackson, late President of the United States, Nashville, Tenn.
*Mrs. Martha Johonnot, Salem.
*Jared Potter Kirtland, M. D., LL. D., East Rockport, O.
*Thomas Andrew Knight, late President of the Horticultural Society of London.
*Gen. La Fayette, La Grange, France.
*Le Comte de Lasteyrie, late Vice-President of the Horticultural Society of Paris.
L. A. H. Latour, M. P., 1396 St. Catherine street, Montreal, Canada.
*Baron Justus Liebig, Giessen, Germany.
*Prof. John Lindley, late Secretary of the Horticultural Society of London.
Franklin Litchfield, U. S. Consul at Puerto Cabello, Venezuela.
*Joshua Longstreth, Philadelphia.
*Nicholas Longworth, Cincinnati.
*Jacob Lorillard, late President of the New York Horticultural Society.
*John C. Loudon, London.
Hon. John A. Lowell, Boston.
*Baron Charles Ferdinand Henry Von Ludwig, late Vice-President of the South African Literary and Scientific Institution, Cape Town, Cape of Good Hope.
*Hon. Theodore Lyman, Brookline.
Col. Theodore Lyman, Brookline.
*Hon. James Madison, late President of the United States, Montpelier, Va.
*Mrs. Charlotte Marryatt, Wimbledon, near London.
Joseph Maxwell, Rio Janeiro.
D. Smith McCauley, U. S. Consul-General, Tripoli.
*Hon. Isaac McKim, late President of the Horticultural Society of Maryland, Baltimore.
Rev. James H. Means, Dorchester, Mass.
*James Mease, M. D., Philadelphia.
*Lewis John Mentens, Brussels, Belgium.
*Hon. Charles F. Mercer, Virginia.
*François André Michaux, Paris.
Donald G. Mitchell, New Haven, Conn.
*Samuel L. Mitchill, M. D., LL. D., New York.
*Hon. James Monroe, late President of the United States, Oak Hill, Va.
*Alfred S. Monson, M. D., late President of the New Haven Horticultural Society, New Haven, Conn.
*Hon. A. N. Morin, Montreal, Canada.
*Théodore Mosselmann, Antwerp, Belgium.
Baron R. Von Osten Sacken, Heidelberg, Germany.
Baron Ottenfels, Austrian Minister to the Ottoman Porte.
John Palmer, Calcutta.

*Hon. Joel Parker, LL. D., Cambridge.
Samuel B. Parsons, Flushing, N. Y.
*Hon. Thomas H. Perkins, Brookline.
*A. Poiteau, late Professor in the Institut Horticole de Fromont.
*Hon. James K. Polk, late President of the United States, Nashville, Tenn.
*John Hare Powel, Powelton, Pa.
*Henry Pratt, Philadelphia.
*William Prince, Flushing, N. Y.
*Rev. George Putnam, D. D., Roxbury.
*Col. Joel Rathbone, late President of the Albany and Rensselaer Horticultural Society, Albany, N. Y.
*Archibald John, Earl of Roseberry, late President of the Caledonian Horticultural Society.
*Joseph Sabine, late Secretary of the Horticultural Society of London.
*Don Ramon de la Sagra, Havana, Cuba.
Henry Winthrop Sargent, Fishkill, N. Y.
*Sir Walter Scott, Abbotsford, Scotland.
*John Shepherd, late Curator of the Botanic Garden, Liverpool, England.
*John S. Skinner, late Editor of the American Farmer, Baltimore, Md.
George W. Smith, Boston.
*Stephen H. Smith, late President of the Rhode Island Horticultural Society.
*Hon. Charles Sumner, Boston.
*Hon. John Taliaferro, Virginia.
*Gen. James Talmadge, late President of the American Institute, New York.
*Gen. Zachary Taylor, late President of the United States, Baton Rouge, La.
*James Thacher, M. D., Plymouth.
John J. Thomas, Union Springs, N. Y.
*James W. Thompson, M. D., Wilmington, Del.
*Grant Thorburn, New York.
*M. Du Petit Thouars, Paris.
*Le Vicomte Hericart de Thury, late President of the Horticultural Society of Paris.
*Mons. Tougard, late President of the Horticultural Society of Rouen, France.
*Gen. Nathan Towson, late President of the Horticultural Society, Washington, D. C.
*Hon. John Tyler, late President of the United States, Williamsburg, Va.
*Rev. Joseph Tyso, Wallingford, England.
*Hon. Martin Van Buren, late President of the United States, Kinderhook, N. Y.
*Federal Vanderburg, M. D., New York.
*Jean Baptiste Van Mons, M. D., Brussels, Belgium.
*Gen. Stephen Van Rensselaer, Albany, N. Y.
*Joseph R. Van Zandt, Albany, N. Y.
*Benjamin Vaughan, M. D., Hallowell, Me.
*Petty Vaughan, London.

*Rev. N. Villeneuve, Montreal, Canada.
*Pierre Phillippe André Vilmorin, Paris.
*James Wadsworth, Geneseo, N. Y.
*Nathaniel Wallich, M. D., late Curator of the Botanic Garden, Calcutta.
*Malthus A. Ward, M. D., late Professor in Franklin College, Athens, Ga.
*Hon. Daniel Webster, Marshfield.
*Hon. John Welles, Boston.
*Jeremiah Wilkinson, Cumberland, R. I.
Hon. Robert C. Winthrop, Boston.
*Frederick Wolcott, Litchfield, Conn.
*Ashton Yates, Liverpool, England.
*Lawrence Young, late President of the Kentucky Hortieultural Society, Louisville.

CORRESPONDING MEMBERS.

A * denotes the members deceased.

*John Adlum, Georgetown, D. C.
Don Francisco Aguilar, U. S. Vice-Consul at Maldonado, Banda Oriental del Uruguay.
*Mons. Alfroy, Lieusaint, France.
James T. Allan, Ex-President of the Nebraska State Horticultural Society, Omaha, Neb.
A. B. Allen, New York.
Rev. Thomas D. Anderson, South Boston.
*Thomas Appleton, late U. S. Consul at Leghorn, Italy.
*Col. Thomas Aspinwall, late U. S. Consul at London, Brookline.
P. M. Augur, State Pomologist, Middlefield, Conn.
*Isaac Cox Barnet, late U. S. Consul at Paris.
Patrick Barry, Chairman of the General Fruit Committee of the American Pomological Society, Rochester, N. Y.
*Augustine Baumann, Bolwiller, Alsace.
*Eugéne Achille Baumann, Rahway, N. J.
*Joseph Bernard Baumann, Bolwiller, Alsace.
Napoleon Baumann, Bolwiller, Alsace.
D. W. Beadle, St. Catherine's, Ontario.
Prof. W. J. Beal, Lansing, Michigan.
*Noel J. Becar, Brooklyn, N. Y.
*Edward Beck, Worton College, Isleworth, near London.
Rev. Henry Ward Beecher, Peekskill, N. Y.
Louis Édouard Berckmans, Rome, Ga.
Prosper J. Berckmans, Augusta, Ga.
*Alexander Bivort, late Secretary of the Société Van Mons, Fleurus, Belgium.
*Tripet Le Blanc, Paris.
*Charles D. Bragdon, Pulaski, Oswego Co., N. Y.
*William D. Brinckle, M. D., Philadelphia.
*George Brown, late U. S. Commissioner to the Sandwich Islands, Beverly.
*John W. Brown, Fort Gaines, Ga.
Dr. Nehemiah Brush, East Florida.
Arthur Bryant, Sr., Ex-President of the Illinois State Horticultural Society, Princeton, Ill.
*Robert Buist, Philadelphia.
*Dr. E. W. Bull, Hartford, Conn.
William Bull, Chelsea, England.

Rev. Robert Burnet, Ex-President of the Ontario Fruit Growers' Association, Pictou, N. S.
Alexander Burton, United States Consul at Cadiz, Spain.
Isidor Bush, Bushberg, Jefferson Co., Mo.
George W. Campbell, Delaware, Ohio.
*Francis G. Carnes, New York.
*Col. Robert Carr, Philadelphia.
*Rev. John O. Choules, D. D., Newport, R. I.
*Rev. Henry Colman, Boston.
*James Colvill, Chelsea, England.
Benjamin E. Cotting, M. D., Boston.
*Samuel L. Dana, M. D., Lowell.
J. Decaisne, Professeur de Culture au Musèum d'Histoire Naturelle, Jardin des Plantes, Paris.
*James Deering, Portland, Me.
*H. F. Dickehut.
*Sir C. Wentworth Dilke, Bart., London.
*Hon. Allen W. Dodge, Hamilton.
Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.
*Andrew Jackson Downing, Newburg, N. Y.
Charles Downing, Newburg, N. Y.
Parker Earle, Cobden, Ill.
*F. R. Elliott, late Secretary of the American Pomological Society, Cleveland, O.
George Ellwanger, Rochester, N. Y.
*George B. Emerson, LL. D., Winthrop.
*Ebenezer Emmons, M. D., Williamstown.
*Andrew H. Ernst, Cincinnati, O.
*Nathaniel Fellows, Cuba.
*Henry J. Finn, Newport, R. I.
*W. C. Flagg, late Secretary of the American Pomological Society, Moro, Ill.
*Michael Floy, late Vice-President of the New York Horticultural Society, New York City.
*John Fox, Washington, D. C.
*Hon. Russell Freeman, Sandwich.
Andrew S. Fuller, Ridgewood, N. J.
Henry Weld Fuller, Roxbury.
Hon. Robert W. Furnas, President of the Nebraska State Horticultural Society, Brownville, Neb.
*Augustin Gande, late President of the Horticultural Society, Department of Sarthe, France.
*Robert H. Gardiner, Gardiner, Me.
*Benjamin Gardner, late U. S. Consul at Palermo, Sicily.
*Capt James T. Gerry, U. S. Navy.
*Abraham P. Gibson, late U. S. Consul at St. Petersburg.
*R. Glendinning, Chiswick, near London.
Prof. George L. Goodale, Cambridge.

CHARLES W. GORDON, U. S. Consul at Rio Janeiro.
PROF. ASA GRAY, Cambridge.
O. B. HADWEN, Ex-President of the Worcester County Horticultural Society, Worcester.
*CHARLES HENRY HALL, New York.
*ABRAHAM HALSEY, late Corresponding Secretary of the New York Horticultural Society, New York.
*DR. CHARLES C. HAMILTON, late President of the Fruit Growers' Association and International Show Society of Nova Scotia, Canard.
*Rev. THADDEUS MASON HARRIS, D. D., Dorchester.
*THADDEUS WILLIAM HARRIS, M. D., Cambridge.
*JOHN HAY, late Architect of the Caledonian Horticultural Society.
*BERNARD HENRY, late U. S. Consul at Gibraltar, Philadelphia.
SHIRLEY HIBBERD, Editor of the Gardener's Magazine, London.
*J. J. HITCHCOCK, Baltimore.
ROBERT HOGG, LL. D., Editor of the Journal of Horticulture, London.
*THOMAS HOGG, New York.
THOMAS HOGG, New York.
J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.
REV. S. REYNOLDS HOLE, Caunton Manor, Newark, Nottinghamshire, England.
FISHER HOLMES, Sheffield, England.
SIR JOSEPH HOOKER, K. C. S. I., Director of the Royal Botanic Garden, Kew, England.
JOSIAH HOOPES, West Chester, Penn.
PROF. E. N. HORSFORD, Cambridge.
*SANFORD HOWARD, Chicago, Ill.
*DR. WILLIAM M. HOWSLEY, late President of the Kansas State Horticultural Society, Leavenworth.
*ISAAC HUNTER, Baltimore, Md.
*ISAAC HURD, Cincinnati, Ohio.
GEORGE HUSMANN, Professor of Horticulture in the University of the State of Missouri, Columbia.
*PROF. ISAAC W. JACKSON, Union College, Schenectady, N. Y.
THOMAS P. JAMES, Cambridge.
EDWARD JARVIS, M. D., Dorchester.
J. W. P. JENKS, Middleborough.
WILLIAM J. JOHNSON, M. D., Fort Gaines, Ga.
SAMUEL KNEELAND, M. D., Boston.
*MONS. LAFFAY, St. Cloud, near Paris, France.
*DAVID LANDRETH, late Corresponding Secretary of the Pennsylvania Horticultural Society, Bristol, Pa.
C. C. LANGDON, Mobile, Alabama.
*DR. WILLIAM LEBARON, late State Entomologist, Geneva, Ill.
G. F. B. LEIGHTON, President of the Norfolk Horticultural and Pomological Society, Norfolk, Va.
*E. S. H. LEONARD, M. D., Providence, R. I.

*André Leroy, Author of the Dictionnaire de Pomologie, Angers, France.
J. Linden, Ghent, Belgium.
Hon. George Lunt, Scituate.
*F. W. Macondray, San Francisco, Cal.
*James J. Mapes, LL. D., Newark, N. J.
*A. Mas, late President of the Horticultural Society, Bourg-en-Bresse, France.
Dr. Maxwell T. Masters, Editor of the Gardeners' Chronicle, London.
*James Maury, late U. S. Consul at Liverpool, England.
T. C. Maxwell, Geneva, N. Y.
*William Sharp McLeay, New York.
*James McNab, late Curator of the Botanic Garden, Edinburgh, Scotland.
Thomas Meehan, Editor of the Gardener's Monthly, Germantown, Pa.
*Allan Melvill, New York.
John Miller, M. D., Secretary of the Horticultural and Agricultural Society of Jamaica.
*Stephen Mills, Flushing, N. Y.
*Charles M'Intosh, Dalkeith Palace, near Edinburgh.
J. E. Mitchell, Philadelphia.
Giuseppe Monarchini, M. D., Canea, Isle of Candia.
Édouard Morren, Editor of the Belgique Horticole, Liége, Belgium.
*Horatio Newhall, M. D., Galena, Ill.
*David W. Offley, late U. S. Consular Agent, Smyrna, Turkey.
James Ombrosi, U. S. Consul, Florence, Italy.
*John J. Palmer, New York.
*Victor Paquet, Paris.
*John W. Parker, late U. S. Consul at Amsterdam, Holland.
*André Parmentier, Brooklyn, N. Y.
William Paul, Waltham Cross, London, N.
*Sir Joseph Paxton, M. P., Chatsworth, England.
*John L. Payson, late U. S. Consul at Messina, Sicily.
*Com. Matthew C. Perry, U. S. Navy, Charlestown.
*David Porter, late U. S. Chargé d' Affaires at the Ottoman Porte, Constantinople.
*Alfred Stratton Prince, Flushing, N. Y.
*William Robert Prince, Flushing, N. Y.
P. T. Quinn, Newark, N. J.
Rev. Rushton Radclyffe, London. England.
*William Foster Redding, Baltimore, Md.
D. Redmond, Ocean Springs, Miss.
Dr. S. Reynolds, Schenectady, N. Y.
*John H. Richards, M. D., Illinois.
Charles V. Riley, U. S. Entomological Commissioner, Washington, D. C.
*Mons. J. Rinz, Jr., Frankfort-on-the-Main, Germany.
*Thomas Rivers, Sawbridgeworth, Herts, England.
William Robinson, Editor of The Garden, London.
*Dr. J. Smyth Rogers, New York.
*Capt. William S. Rogers, U. S. Navy.

BERNARD ROSIER, M. D., Athens, Greece.
*THOMAS ROTCH, Philadelphia.
*GEORGE R. RUSSELL, Roxbury.
JOHN B. RUSSELL, Newmarket, N. J.
*REV. JOHN LEWIS RUSSELL, Salem.
WILLIAM SAUNDERS, Department of Agriculture, Washington, D. C.
*WILLIAM SHALER, late U. S. Consul-General at Havana, Cuba.
*WILLIAM SHAW, New York.
*CALEB R. SMITH, Burlington, N. J.
*DANIEL D. SMITH, Burlington, N. J.
*GIDEON B. SMITH, late Editor of the American Farmer, Baltimore, Md.
JOHN JAY SMITH, Germantown, Penn.
*HORATIO SPRAGUE, late U. S. Consul at Gibraltar.
ROBERT W. STARR, Port William, Nova Scotia.
DR. JOSEPH STAYMAN, Leavenworth, Kansas.
*CAPT. THOMAS HOLDUP STEVENS, U. S. Navy, Middletown, Conn.
WILLIAM FOX STRANGEWAY, British Secretary of Legation at Naples, Italy.
DR. J. STRENTZEL, Martinez, Cal.
*JUDGE E. B. STRONG, Rochester, N. Y.
*JAMES P. STURGIS, Canton, China.
WILLIAM SUMMER, Pomaria, S. C.
FRANCIS SUMMERST.
*PROF. MICHELE TENORE, late Director of the Botanic Garden at Naples, Italy.
*JAMES ENGLEBERT TESCHEMACHER, Boston.
*ROBERT THOMPSON, Chiswick, near London.
*GEORGE C. THORBURN, New York.
PROF. GEORGE THURBER, Editor of the American Agriculturist, New York.
*JOHN TILSON, JR., Edwardsville, Illinois.
*CAV. DOCT. VINCENZO TINEO, Director of the Botanic Garden at Palermo.
*LUTHER TUCKER, Editor of the Cultivator, Albany, N. Y.
CAREY TYSO, Wallingford, England.
*LOUIS VAN HOUTTE, Ghent, Belgium.
*ALEXANDER VATTEMARE, Paris.
*EMILIEN DE WAEL, late Secretary of the Horticultural Society, Antwerp, Belgium.
JOHN A. WARDER, M. D., President of the Ohio State Horticultural Society, North Bend, O.
ANTHONY WATERER, Knapp Hill, near Woking, Surrey, England.
*J. AMBROSE WIGHT, Editor of the Prairie Farmer, Chicago, Ill.
BENJAMIN SAMUEL WILLIAMS, Holloway, London, N.
PROF. JOHN WILSON, Edinburgh University, Scotland.
*WILLIAM WILSON, New York.
*HON. J. F. WINGATE, Bath, Me.
*GEN. JOSHUA WINGATE, Portland, Me.
*JOSEPH AUGUSTUS WINTHROP, Charleston, S. C.

CONTENTS.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1881.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1881.

The Committee on Publication and Discussion, take this opportunity to repeat what they have heretofore stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature in the papers and discussions now or before published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly. The award of a prize or gratuity for an Essay is not to be understood as implying that the Committee approve it in every particular, but only that they believe it calculated, *on the whole*, to promote the science or art of Horticulture.

BENJAMIN G. SMITH, *Chairman.*

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 1, 1881.

A duly notified stated meeting was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

The President delivered his annual address, as follows :—

Ladies and Gentlemen of the Massachusetts Horticultural Society:

In accordance with the usages of the Society we have assembled at the opening of the year to review the doings of the past, to rejoice together in what has been accomplished,—to regret our shortcomings, with determined resolves of amendment in the future, — to renew our pledges of devotion to the interests of the Society,—and, with united will, to proceed to do in our day what is rightfully expected of us, as successors of the good men, who in wisdom and liberality founded, established, and carried on to success this institution as a means for the material and moral improvement of mankind.

Acknowledging with profound gratitude what has been done by the departed, as well as by those who now live to receive our thanks, and to counsel and cheer us in the performance of duty, let us see what our situation is at the present time, and consider what is incumbent upon us to do, that we may perpetuate and enlarge the usefulness of this Society for the advantage of our own as well as of future generations.

By the Treasurer's report, submitted a year since, it appeared that the Society then possessed property of the estimated value of $277,045.23, and it owed $84,500. The debt consisted of $60,000,

secured by a mortgage of our real estate; a loan of $12,000, not bearing interest, payable to Harvard College in 1899, this being the amount we have the use of, by the gift of the late Josiah Stickney, for the purchase of books; a note of $12,000, which we borrowed originally of the Market National Bank, and have paid within a few months by borrowing the same amount for that purpose of another bank: and the sum of $500 due the Committee on Publication.

We depend mainly upon the real estate belonging to the Society, and upon what we annually receive from Mount Auburn to meet our expenses. It will be seen by the above report that we received in 1879 from rents $14,950.80, and from Mount Auburn $2,212.41. Our Treasurer stated that our finances were not self-sustaining at the date of his report last year.

I am happy to inform you that I learn from the Treasurer our financial situation is now somewhat better than it was a year ago. That the income from our real estate for the year 1880 was about $4,000 more than it was the previous year, and that Mount Auburn will give us also a small increase of revenue. The Treasurer estimates that our expenses have increased about $1,300, for the year 1880, over those of the previous year. This would show an improvement in net income of about $3,000 for the past year. We cannot rely upon the accuracy of the statement, as it necessarily is but an approximate one, the Treasurer being obliged to wait to receive the accounts from Mount Auburn before he submits his annual report. So favorable a statement as this could not have been presented, if proper repairs had been made upon our building, which are imperatively demanded.

Our exhibitions are not so important and beautiful as they might be made; and to secure an improvement of them, larger sums than we have lately been able to afford, should be appropriated for prizes to stimulate exhibitors, and to induce them to display their products in our halls.

Moreover, our exhibitions should be made better known to the public than they have been. During the past year they have been excellent, and worthy of greater attention than they have commanded. The community do not understand how beautiful and interesting they are, and it seems to me desirable that measures should be taken through the public prints, by advertisements and otherwise, to call attention to them, and thus not only the public but this Society would be much benefited.

The chief part of the revenue of foreign horticultural societies is derived from entrance fees paid by visitors, and the exhibitions of most of the societies of this country are sustained by the visitors. At Worcester, in our own State, the sums derived from annual exhibitions have been very considerable, far exceeding the receipts of our Society from the same source, and this result has been obtained not only by the personal efforts of committees having the matter in charge, but by judiciously advertising the exhibitions in various ways by which many visitors have been attracted to them. It certainly is strange that though our Society has its home in the largest city of New England, with a building containing all the conveniences which man could desire for the display of horticultural products, and situated in the most eligible locality for access by visitors, and its exhibitors and patrons those who possess the most extensive and beautiful gardens and conservatories in Massachusetts, many of these gentlemen being distinguished throughout the world as proficients in the science and art of horticulture; yet its exhibitions are poorly attended, and its receipts from visitors are less than those derived from the show of many a county society in the country. I call attention to this subject believing that some means should be adopted to bring our exhibitions more into public notice, by which the pleasure and improvement of the people at large would be much increased, and the Society benefited from the increase of admission fees, so as to enable it to enhance the beauty and increase the usefulness of its exhibitions.

As I have before stated our building requires repairs. It needs them both outside and inside. I think it would be desirable to expend from three to five thousand dollars very soon to preserve and judiciously improve our estate. It is most unwise to allow our elegant structure to deteriorate for want of proper care. Unless important repairs are made forthwith, a very great expenditure will soon be wanted to put the estate in a tenantable condition.

We have a debt of $12,000 incurred by spending in past years more than our income. Upon assuming the duties of the office to which you elected me, my attention was particularly directed to the financial situation of the Society, and though, by the rules governing us, it does not belong to your President to attend to the management of the finances of the Society, yet it is expected of him to have a general acquaintance with and supervision of its affairs

to qualify him for the duty imposed upon him by the Constitution and By-Laws, "to report from time to time what measures, in his judgment, are necessary to promote its objects and extend its usefulness." The necessities of the times, and the pressing wants of the Society, as I have been informed, occasioned the debt; but now, in the improved financial condition of the country, in which this Society and its members generally participate, it seems to me we should take measures to discharge this incumbrance as soon as possible, and resolve that in the future the Society shall not expend more than its income. We must insist upon it that in no event shall we allow the Society's fixed investments to be lessened or incumbered under our management. I, therefore, call upon all members of our association, whether they are responsible or not in any manner for the creation of the debt, to unite as friends of the Society in discharging this debt. It must not be fixed permanently upon the Society. We ought not to borrow money to renew indefinitely the obligation. We must not place any mortgage on our estate to provide for its payment. It should be met and paid as early as possible during the present year, and if you will all aid, according to your means, the debt will soon be paid.

I again call your attention to the importance of making arrangements so that the library shall be used as a place of quiet study, for the accommodation of our members. It is degraded by its present use as an office where the business of the superintendent and of the transient tenants of the halls, in their multifarious occupations, is carried on so as to disturb and seriously annoy those who desire to make a legitimate use of the room. It wholly subverts the proper use of the library as a reading-room and for literary labor, and makes it a noisy business office, thus almost entirely setting aside and disregarding the intentions of those who have contributed liberally to provide a quiet resort, well furnished with books, for students in the science and art of horticulture, and a place which members can frequent to inform themselves, through the periodicals of the day, of the progress of the world in those matters in which they are especially interested. It is also the room where we should come together on stated days to listen to, and participate in, the discussions which you have instituted, undisturbed by the interruptions of business.

It seems to me not necessary to wait until additional buildings are obtained before we accomplish the desired object, as by some

inexpensive alterations we can better provide for the tenants of the halls, and allow sufficient accommodation for the business wants of our officers.

In this connection I would inform you that the Executive Committee unanimously recommend to you amendments of the Society's Constitution and By-Laws, so as to allow the duties of treasurer, superintendent, and librarian to be performed by more than one person, instead of its being required, as it is now, that one person shall discharge all those different duties. It will, if you approve of the recommendation, be left to the Executive Committee to select, from time to time, such person or persons as they think best, for the interests of the Society, to fill those offices.

It gives me pleasure to bear witness to the able and faithful manner in which your different committees have discharged, during the past year, the duties respectively committed to them. By reading their reports you will observe that, in many respects, the exhibitions of 1880 have shown marked improvement over those of previous years. The Society has never had, I understand, so large and beautiful displays of fruits and flowers as have been exhibited the past year. Our collection of books has been rendered more valuable by the judicious action of the Library Committee in making additions to it. Your Committee of Arrangements have been diligent in the performance of their duties, and discharged them in such a manner as to give great satisfaction to the members of the Society.

I call your attention to the admirable manner in which your Secretary has edited the History of the Society, and reported its doings. I regret that he has not been able, from lack of time, to cause the publication of the Transactions of the Society beyond the year 1879, but trust that we shall soon see the other parts in print, and that circumstances will never again prevent the publication of the Society's Transactions in the early part of the year after they have taken place.

Ladies and Gentlemen, — It must never be forgotten by us that we owe a duty to those who, by their wisdom, liberality, and labors, founded and established this Society for the public good. Their work was not done for themselves and for us alone, but for all future generations. It devolves upon us, in accepting their legacy, to transmit it to our children not only unimpaired, but improved and strengthened by our work and contributions. While grate-

fully remembering what has been done, it is not for us to rest satisfied with what has been accomplished, but, stimulated by the example of our predecessors, we must do our work as they did theirs, in a generous spirit, for posterity as well as for our own generation, or we shall not be worthy successors of those who have done so much for us. Our Society is yet in its infancy, and I believe there is a great future for it. There are those with us, and I hope there are many, who do not believe that nothing more need to be done, or will be done, by the members of this Society to increase its usefulness and add to its glory. We have inherited much, but we should not allow our inheritance to impair our energy or make us slothful in the performance of our duties. Let us always bear in mind that there is much before us to do. To the development of horticultural knowledge throughout the world this Society should make a liberal contribution. It has done something already, and we can look with great pleasure upon what has been accomplished under its auspices in introducing new varieties of plants and improved fruits, in the embellishment of gardens and grounds throughout the country, and in the dissemination of horticultural information. Yet we must not stop here. We are still but on the threshold in our investigations of the beauties and resources of nature, which will employ eternity to disclose. We have, I trust, but made a beginning of the great work this Society is destined to accomplish. We must not wait for others, or rely upon a few persons to bear the burden attending this work; but we must all do what our hands find to do, to build still higher and on deeper and more solid foundations the institution entrusted to our care, that it may ever be a blessing not only to ourselves and this community, but to all mankind.

On motion of Hon. Marshall P. Wilder, the thanks of the Society were voted to the President for his address, and a copy was requested for publication.

The President presented the following amendments to the Constitution and By-Laws, recommended by the Executive Committee:

Voted, That the thirteenth and sixteenth sections of the Constitution and By-Laws of this Society be amended by striking out in the thirteenth section the words, "He shall also act as Superintendent of the Building, subject to the orders of the Finance Committee, and shall attend to the care and letting of the same, and

the collection of rents, and other income of the Society." And, also, in the same section, strike out the words, "He shall also act as Librarian under the direction of the Library Committee." And strike out in the sixteenth section, after the word "appoint," in the sixth line of the printed copy of the By-Laws, the words, "A Treasurer and a Secretary of the Society," and insert, after the words in the seventh and eighth lines of said copy, "Whenever a vacancy shall occur," the words, "A Treasurer, a Secretary, a Superintendent of the Building, and a Librarian of the Society, and define their respective duties, except where these are determined by the By-Laws."

The proposed amendment was read once and passed to a second reading by a unanimous vote; and, having been read a second time, was laid over until the stated meeting in April.

Hon. Marshall P. Wilder presented a recommendation from the Executive Committee that the Society invite the American Pomological Society to meet in Boston, in September next, and on motion of William C. Strong, the following vote was unanimously passed:

Voted, That the Massachusetts Horticultural Society hereby extends to the American Pomological Society, a most cordial invitation to hold its Eighteenth Session, on September 14th, and succeeding days, with the usual courtesies for their accommodation.

Mr. Wilder, as President of the American Pomological Society, accepted the invitation with hearty thanks, and stated that the invitation would involve no expense to the Massachusetts Horticultural Society.

On motion of John B. Moore, it was *Voted*, That the Executive Committee, in connection with the Finance Committee, be directed to carry out the recommendations in the President's address, concerning alterations in the building.

The Annual Report of the Committee on Vegetables was read by Charles N. Brackett, Chairman, and the Annual Report of the Committee of Arrangements, by John B. Moore. These reports were severally accepted and referred to the Committee on Publication.

William H. Spooner moved to take up the vote offered by him

at the meeting on the 11th of December, 1880, and then laid on the table. The motion was carried, and it was

Voted, That the Prospective Prize of $40 for the best Seedling Flowering, or Foliage Plant (other than Rose, Camellia, Azalea Indica, Tree Pæony, Hardy Rhododendron, or Hardy Azalea), be awarded to Joseph Tailby for his Seedling Carnation, Grace Wilder, as recommended in the Report of the Committee on Plants and Flowers.

The following named persons were proposed for membership in the Society: J. Montgomery Sears, of Boston, and William Power Wilson, of Boston, by the President; John E. Russell, of Leicester, and John H. Moore, of Concord, by John B. Moore; and Edward Baker Wilder, of Dorchester, by Hon. Marshall P. Wilder. The President urged upon the members the importance of zealous efforts in adding to the membership of the Society.

Charles M. Hovey moved the appointment of a Committee of three, to procure a portrait of the President to be added to the series in the hall of the Society. The motion was unanimously passed, the question being put by Vice-President John B. Moore, who appointed, as the Committee, Charles M. Hovey, Robert Manning, and Joseph H. Woodford.

Benjamin G. Smith, Chairman of the Committee on Publication and Discussion, announced that the meetings for discussion the present season, would commence on the next Saturday, with the reading of a paper by William H. Spooner, Chairman of the Committee on Plants and Flowers, on the "Cultivation of the Rose," to be followed by a discussion.

Adjourned to Saturday, January 8.

BUSINESS MEETING.

Saturday, January 8, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

The President announced the appointment, by the Executive

Committee, of Edwin W. Buswell as Treasurer, and Robert Manning as Secretary, of the Society.

David Allan, of Belmont, was proposed by Charles M. Hovey, as a member of the Society, and Edwin Faxon, of Boston, by E. H. Hitchings.

Further time was granted to the Treasurer, to make his Report.

Adjourned to Saturday, January 15.

MEETING FOR DISCUSSION.

Immediately after the adjournment of the business meeting, a meeting for discussion was held, at which the following paper by William H. Spooner, Chairman of the Committee on Plants and Flowers, was read by the author:

Some Experience in Hardy Rose Culture.

In looking at a subject so extensive as Rose Culture, from the little spot which limits my own efforts in that direction, I can only offer hints which may be useful to the inexperienced, but can suggest nothing of special value to the professional grower.

It is generally supposed that to attain even a moderate measure of success in the rose garden, all advantages of soil, scientific appliances, etc., are essential, but the amateur will find very satisfactory results even when these conditions are not carried to great perfection. The soil of my garden is not particularly adapted for the growth of roses, being a light loam with a gravelly subsoil, yet from this apparently uncongenial source I succeed in growing a great many very good roses. I am not an advocate of the deep trenching or subsoiling system in the preparation of the ground, considering it entirely unnecessary.

My system of planting was very simple at the outset, the land being already in a good state of cultivation. First, preparing myself with a sufficient heap of well-rotted horse manure, the space assigned for the plants was covered with a portion of the compost, spread broadcast, and then thoroughly ploughed in. I may mention here that I have at other times made use of hen manure, mixed with about one-third soil, and consider it a good fertilizer for the rose. The ground was then laid out in rows three feet apart, and

the same distance between the plants; the holes for their reception were prepared by throwing out the soil to the depth of one spade from each, and then throwing in two or three forkfuls of manure, thoroughly incorporating it with the soil to the depth of the spade, when all was ready for the plants.

My plants are all the so-called dwarfs, worked low upon the Manetti stock, which I prefer to the Prince's or seedling brier, as it seems better adapted to my light soil. I judge the latter stock may be better suited to a stronger or clayey soil; at any rate, all the plants I had worked upon it have died. My plants were imported, and not received until about the 10th of December, when the ground was closed, so that I was obliged to keep them in snug winter quarters, bedding them carefully into a frame, protecting them very closely with leaves, and covering the frame with boards. They came out in splendid condition in the spring, and were planted with hardly an exception to successful growth, which result has led me to prefer the spring for planting in our uncertain climate, and I have continued to make small experiments of the same kind yearly since my first venture. Having cut back the plant to two or three buds, the stock should be planted with the collar about two inches under the surface, and the soil pressed very firmly about it. Through the summer I apply guano to the surface occasionally—a handful or two to each plant, sometimes in a dry state, and sometimes in water. I use frequently, in summer, a top dressing of brewers' spent hops, strewn broadcast, not digging it in; it helps to keep down weeds, and has many advantages.

The rose, in a healthful, growing state, is a great absorber of water, and the free use of the hose morning and evening has been my most reliable assistant in promoting its health and in freeing the plants from insects. Every fluttering leaf of the plants seems to rejoice, as the cool water showers down upon it, and the clean, fresh foliage greatly enhances the beauty of the blossoms which it surrounds. But insects are ready to invade every domain of horticulture, and are especially destructive to the perfection of the Queen of Flowers; some of them may be overcome, but as regards the rose-bug or rose-beetle, I am in despair. The only remedy for this persistent plague that I have found has been the continuous application of the thumb and forefinger, and that with some severity.

It may be urged by some that the budded rose has entailed upon

it the disadvantage of suckers, and endless care to prevent them; but actual experience proves this to be very slight. It is presumed that a lover of the rose is with his pets as often as possible, and these persistent thieves are easily detected and quickly destroyed. I cannot agree with those who claim that the maiden bloom is the best effort with the budded rose, as I am now growing plants on the Manetti stock which have been out eight years, and are producing as fine blooms as ever. The amateur wants results in the shortest time, and therefore must take the budded plant; if sunk deeply enough it soon becomes fixed on its own roots. Few of us can hope to rival the Madame Lacharme and Paul Neron of a Hayes, the Pierre Notting of a Gray, or the Horace Vernet and Charles Lefebvre of a Moore, but I am sure that the Manetti stock will give us an approximation to their high standards.

There is evidently a great difference in the constitution of hardy hybrid roses, as has been proved by success or failure under the varying influences of climate, soil, or stock, and as some results of my individual experience may prove suggestive, I append a list of a few which have been successful under my system of culture.

Abel Carrière.—Moderately vigorous; hardy; beautiful.

Alfred Colomb.—This superb rose is quite hardy and vigorous; its brilliant crimson flowers are unrivalled.

Beauty of Waltham.

Bessie Johnson.

Charles Lefebvre.—A very strong and hardy rose; flower large, and beautifully formed.

Comtesse d' Oxford.—Hardy, vigorous, with fine large flowers.

Coquette des Blanches.—A white rose, and a truly perpetual bloomer until late in the autumn; a remarkably vigorous grower, and has proved hardy with me until last winter, when it was killed to the ground.

Dr. Andry.—Hardy, vigorous, and a free bloomer.

Duke of Edinburgh.—One of the strongest and most hardy.

Dupuy Jamain.

Eliza Boelle.—Moderately vigorous; hardy, with a very delicate white bloom, shading to flesh color.

Emily Laxton.—Vigorous; of a climbing tendency; hardy, and very desirable.

Fisher Holmes.

Jean Goujon.

John Hopper. An old favorite; hardy, and a very fine bloomer.

Jules Margottin.—Of vigorous habit; very hardy, and still one of the best.

Lord Clyde.—A remarkably strong grower, hardy, and a very good rose.

Mabel Morrison.

Marie Beauman.—One of the very best; moderately vigorous, quite hardy, with large and perfect flowers.

Miss Hassard.—Vigorous, hardy; delicate flesh color, very sweet, and a free bloomer.

Mme. Boll.—Perfectly hardy and vigorous; a free bloomer, and early; flower not the most perfect in form or color.

Mme. Gabriel Luizet.—Vigorous; hardy; a free bloomer, and I think may prove one of the best.

Mme. Georges Schwartz.

Mme. Rivers.—A fine rose; moderately vigorous and hardy.

Mme. Scipion Cochet.

Mme. Victor Verdier.

Mme. Vidot.—Moderately vigorous; hardy; flower beautiful, and perfect in form.

Mons. Boncenne.—A plant of good habit, very hardy and vigorous; the best of its class with me.

Paul Neron.—Vigorous and hardy.

Pierre Notting. Very hardy; of good habit, and a strong grower, but, alas! how seldom do we find a fully developed and perfect flower; a bright sun apparently scorches the petals in the bud.

Princess Louise Victoria.

Senateur Vaïsse.

Sir Garnet Wolseley. A thick, bushy plant, rather short-jointed, moderately vigorous and hardy; its large vermilion flowers and profuse bloom are very attractive.

Souvenir de Charles Montault.

Thomas Mills. Very hardy; a well-formed plant, of great vigor of growth; a very prolific bloomer; flowers very large. One of the best with me.

Triomphe de Caen.

Victor Verdier. Always good and reliable.

I will now name a few varieties that have not proved hardy, or have been weak in growth, and less satisfactory in general results in my experience.

Cranston's Crimson Bedder.—This seems hardy enough, but is a very poor grower.

La France.—Almost invariably killed.

Louis Van Houtte.—Almost always killed. I only saved it one year.

Mlle. Bonnaire.—Very beautiful, and free in flower, but a poor grower.

Mlle. Eugénie Verdier.—A weak grower, although a beautiful rose.

Mme. la Baronne de Rothschild.—Usually winter killed nearly to the ground, and is never a vigorous grower.

Mme. Lacharme.—Very tender.

Prince Camille de Rohan.—Is *not* very hardy. I know this is not the general experience, but I have lost all my plants.

Mlle. Marie Rady, *Vicomte Vigier*, *André Dunand* and *Captain Christy* have proved tender.

The Moss Rose.—Turning now to the fairest of the Rose family, we are reminded of the poetic allegory which accounts for its added beauty, by supposing an angel to have found repose beneath its branches, and to have wished to bestow some gift in recompense, but to have been scarcely able to devise any addition to its charms:

> "The angel paused in silent thought:—
> What grace was there the flower had not?
> 'Twas but a moment:—o'er the rose
> A veil of moss the angel throws;
> And, robed in Nature's simplest weed,
> Could there a flower that rose exceed?"

I must confess to a great love for this fascinating class, partly for the reason that my light, well-enriched soil, with its natural subsoil drain of gravel, tends to bring it to full perfection, and partly because the delicate fragrance of the foliage is peculiar and unique. The ground for Moss roses should be prepared in the same way as for the hardy perpetuals, with a larger application of manure; and I also apply a more liberal annual summer dressing during the blooming season. I have always found the Moss rose more difficult to successfully transplant than any other, and it starts very slowly on its own roots.

All my Moss roses are worked upon the Manetti stock except

the Common; these I prefer on their own roots. The varieties that have proved best with me are:—

Baronne de Wassenaër.—Perhaps the strongest grower of all; wood very dark and spiny, blooming in large clusters of buds; not as mossy as some other kinds.

Celine.—Hardy, moderately vigorous, spreading; foliage dark colored, leaves rather small; a profuse bloomer, bud rather soft, and not very double. It would probably force well.

Common.—The best of all; fine double flower.

Crested.—The next best; very double.

Gracilis, or *Prolific.*—This resembles the Common, but has a longer bud.

Laneii.—A vigorous, upright grower, and moderately free bloomer.

Perpetual White.—Moderately vigorous; color pure white; buds small and short stemmed, in rigid clusters of from four to six; foliage pale green, leaves crisped. Not very hardy.

White Bath.—With me the best white.

The so-called Perpetual Mosses seem to me a myth as Moss roses; they may be perpetual, but they possess very little moss, and the only variety that I have been able to save is Mme. Moreau, which is a perpetual free bloomer.

The few suggestions I have endeavored to present to you have been gleaned from personal observation in planting, tending, nourishing, and comparing, with results as here briefly stated.

Discussion.

Hon. Marshall P. Wilder, said that he came in specially to hear the essay by Mr. Spooner, who is a practical cultivator, as his ancestors were. Different soils suit different varieties of roses. He agreed with the essayist in regard to the beauty of the Moss rose, but thought Laneii the best of all. It roots freely, while Moss roses generally have few roots. Mr. Wilder stated that Mr. Thorburn, the New York nurseryman and seedsman, once returned an invoice of Moss roses because they had no roots. Mr. Spooner's soil may have been less favorable to the Laneii than the speaker's. The latter desired lists of the best roses, selected from the thousands on the catalogues, to save cultivating

so many kinds; the lists to be composed of such proved varieties as Baron Prevost, John Hopper, Maréchal Niel, and Bon Seline, which hold on perpetually, and Safrano, which is the very thing wanted by the florists and connoisseurs. We are arriving at selections in other flowers, such as the chrysanthemum. In tomatoes, instead of the twenty kinds in cultivation, we want no more than four of the best. The first effort of the American Pomological Society brought down the list of fruits from thousands, to a selection desirable for every garden.

John G. Barker said that his experience in rose culture had differed somewhat from Mr. Spooner's. Six years ago he made two beds of Hybrid Perpetuals, for which he dug out the soil to the depth of eighteen inches, and replaced with a compost of equal parts of well decomposed sods, horse manure, and cow manure. The varieties were selected from the roses exhibited in 1872 and 1873. There were thirty plants in each bed, on Manetti stocks. The soil was naturally moist, and they were planted so as to root from the grafts. They made a most astonishing growth the first year, and the next spring were pruned severely, and the small wood was thinned out in summer. They made shoots higher than his head, which, when signs of growth appeared in spring, were pegged down to the soil. These two beds were solid masses of flowers; though not of the largest size, there were legions of them. He thought this the most satisfactory result, when, as in the present case, they were for the benefit of the public. Afterwards, he made two more beds in the same way, first making diagrams and marking all the varieties on them, for the instruction of the visitors to Pine Grove Cemetery, Lynn, of which he is superintendent. He has never had a rose-bug on his roses, though they destroyed a pelargonium bed not forty feet away from the rose beds. High culture and vigorous growth may have kept them away. He has never been troubled with the rose-slug. He goes over the bed with a scuffle hoe every two or three days; this keeps the ground moist and the surface does not bake after rain, as it does when raked. He adopted this method of culture because he is obliged to choose the cheapest way. He pegs down the shoots after pruning off twelve or fifteen inches of the end, and never covers them. Madame Plantier is one of the white June roses, but needs a little covering, which is a good investment, for it forms a mass of flowers. He has two bushes of the old-fashioned Red

Moss rose in soil which has not been enriched for eight years, but they form masses of flowers.

Charles M. Hovey, said that for sixteen consecutive years, he took prizes for the best thirty hardy June roses. Many of the old roses of twenty years ago still take the prizes. Bon Seline, Maréchal Niel, Gen. Jacqueminot, and John Hopper, are all good, but have their defects. The best part of Mr. Spooner's paper is that in which he points out what have not succeeded with him. The speaker was the first to import the Madame Plantier, and had found it perfectly hardy, though it may be well to cover it in very exposed situations. The two things which the rose requires are the pump and the manure heap. Mr. Hovey thought the best English cultivators preferred roses on their own roots. All things, with rare exceptions, grow best on their own bottoms; grapes do best on their own roots. We must resort to stocks to rapidly increase the plants of varieties. There are some bad results from grafted roses — among others, suckers from the stock, which gain the ascendancy over the graft. He has a row of Hybrid Perpetuals, six or seven feet high, on their own roots. In selecting roses, we should choose kinds which will stand our hot suns. Mr. Hovey spoke in favor of the class of roses known in England as "decorative roses," — hardy, vigorous, and abundant flowering kinds; just what everybody wants, and not simply roses for exhibition.

William C. Strong had enjoyed Mr. Spooner's essay. He was surprised to hear such a young and progressive member of the Society as Mr. Hovey, opposing the introduction of new varieties, particularly since the wonderful progress of the past few years. In the English prize lists, there are few varieties of more than ten or twelve years' standing. It is a laborious process to weed out the inferior varieties. He dissented from the views of those who thought it needful to keep fertilizers to rot down; much ammonia is lost during this process. The rose is a gross feeder and will take fresh manure; moreover, it wants a heavy soil, and old compost is light and makes the soil light. In making a rose border in his house, he used green cow manure; the mixture laid two or three days and was turned over, and Manetti stocks were planted in the border in March and budded in June, and ripened eight or ten feet of wood. He had seen young roots of the Manetti stock strike into fresh cow manure. He would prefer fresh manure to

old, but if he had had time when he made his border, would perhaps have turned it over a little more. He dissented from Mr. Hovey's views in regard to stocks; weak growers are vastly benefited by grafting. Tea roses are benefited by being grafted on vigorous stocks. Such stocks impart a vigor to weak growing kinds, which they can never get on their own roots, as the *Magnolia acuminata* imparts vigor to the smaller growing kinds grafted on it.

Mr. Wilder said that no one is more anxious than he for the production of new varieties. He carries all the time two camel's hair pencils in his pocket, to be always ready to transfer the pollen from one plant to another. He has repeatedly exhorted to sow perpetually to obtain new varieties, and if he could go back fifty or sixty years, he would practise this more than he ever has done. The world moves, and he wants to move with it; and no one admires the enterprise of the President and others, in introducing new roses and plants more than he; but he desires a consolidated list of such standard varieties as he had mentioned.

Rev. A. B. Muzzey said that he could not compete with practical cultivators, but he thought that the comparative value of old compost and fresh manure ought to be ascertained and settled in our discussions. Farmers used to let manure be exposed to the air, at an immense waste of ammonia, but they do otherwise now. He suggested experimenting with fresh manure, but would cover it with soil to save its fertilizing qualities. He remembered the two old roses, white and red, and questioned whether we had improved on them in beauty and fragrance. We should not throw away good things because they are old.

Mr. Hovey said that the best twelve Tea roses would include the Maréchal Niel and Niphetos. No white Tea rose comes up to Niphetos. Souvenir de Malmaison has never been excelled. It is the same with some of the old Hybrid Perpetuals. The old Moss roses are the best. Princess Adelaide is a good grower and a wonderful bloomer. He would adhere to the good old varieties, and while he would test all the new ones, he would not rely on them as garden varieties until they have been proved. He visited M. Laffay in 1844, and purchased the first Princess Adelaide Moss that came to America, and the first La Reines.

John B. Moore said that he could find no fault with the directions given in Mr. Spooner's paper. People find in books, direc-

tions to make rose borders four feet deep, of half manure, like Mr. Gray's, but the speaker thought we could do better by following Mr. Spooner's method. When he (Mr. Moore) began cultivating roses, it was in a light soil which absorbed too much water. He objected to clay to make it more retentive, and preferred the strata of very fine consolidated quicksand found in sand pits. They are so hard as to require a pick-axe to break them up, but if spread on the ground they dry and crumble, and when worked into light soils make them permanently more retentive. He agreed with Mr. Strong that roses are gross feeders; they cannot have too much manure. In answer to Mr. Hovey, Mr. Moore said that it was not necessary to have the same things over and over again. Mr. Hovey thinks that roses are best on their own roots, but a large proportion will grow stronger on Manetti stocks. The suckers are so unlike the grafts that any but the most stupid person can distinguish them, and fifteen minutes will suffice to remove them from a large bed. He plants his roses in rows four feet apart; walking between the rows compacts the earth so that it will not absorb rain, and instead of a rake or scuffle he uses a French cultivator, drawn by a horse, to stir it. He earths up the plants in autumn. Baroness Rothschild kills down to the earth line. Madame Lacharme is worthless except to collect rose-bugs; they must be shaded; the bush will grow, but fails to give good flowers. In answer to an inquiry how new roses differ from the old, Mr. Moore said that many are more beautiful, and while few of the old roses bloom later than June, with the new ones we can have flowers from June to October, and a few roses in August, when they are scarce, are more desirable than many in June. He has three hundred varieties, but does not propagate above seventy-five. One will mildew; another may be beautiful but fail to grow; another may do both. Coarse strawy manure will lighten the soil more than old compost, and therefore should not be used. It is also objectionable as a covering, for if the wood is not well ripened it is apt to kill it, but after heaping up the earth ten inches high around the bushes in autumn, he covers it with manure, to prevent it from freezing and thawing, and throws coarse meadow hay between the rows. Cold weather will not hurt them. There are two sides to the question of ammonia escaping from the manure heap; it is not always ammonia that we smell there. He did not approve of rotting down manure generally, but did not believe in any great loss in doing it.

Mr. Wilder said that our fathers did not appreciate the value of manure, as was shown by their laying it by the roadside to run to waste in the gutter.

President Hayes said that he had not so much experience in rose culture as many others, but he was satisfied that there is opportunity for progress. There is a future before us for the Society—for the rose, and for the rhododendron. Mr. Wilder and Mr. Hovey, in spite of loving old things, know there is a future of progress before us. We have all looked with great interest on the new varieties of roses exhibited, and he had ordered all the new kinds, because he desired to have the future of the rose fully illustrated. Many of the very new varieties have succeeded with him; few have been lost in comparison with the whole. Madame Lacharme stood at the head of those with which he took the silver cup for the best three varieties, and though he had to pick rose-bugs from the plants, he produced what was said to be the most beautiful rose exhibited in the hall. He mentioned his success with this variety to show what can be done with a delicate kind. In one place the soil produces perfection in one kind and refuses to give another, and this wonderful adaptation exists so that every one can bring forth something beautiful. The rose is a gross feeder, and will bear fresh manure, and perhaps cow manure is best of all.

Joseph H. Woodford said that though he had had but little experience he had carefully observed the methods of others. He thought Mr. Moore's method of protection best. The soil should be hauled away from the plants, and the manure in the trenches should be forked in in the spring. Most of the tender varieties may be preserved in this way. The speaker had seen a similar method used by John C. Chaffin, one of the best rose growers. He sifted long straw among the bushes, so as to afford partial shade in March and April, having found that the hot sun at that time spoiled the buds on the sunny side. Mr. Woodford read the following list of thirty roses, noted by him as the best in the exhibition of 1880:

Alfred Colomb,
Caroline de Sansal,
Charles Lefebvre,
Comtesse d' Oxford,
Dr. de Chalus,
Dr. Sewell,
Duc de Montpensier,
Duke of Connaught,
Dupuy Jamain,
Étienne Dupuy,
Exposition de Brie,
Ferdinand de Lesseps,

Fisher Holmes,	Mme. Lacharme,
Gen. Washington,	Mme. Prosper Laugier,
Horace Vernet,	Mons. Boncenne,
Jean Soupert,	Mons. E. Y. Teas,
La Rosière,	Mrs. Baker,
Mabel Morrison,	Pierre Notting,
Magna Charta,	Sir Garnet Wolseley,
Mlle. Marie Rady,	Thomas Mills,
Mme. la Baronne de Rothschild,	Vicomte Vigier.

The above list comprises both old and new kinds, and one American variety. Any one can grow the good old varieties, but not one in a hundred can grow Caroline de Sansal or Madame Lacharme. We should grow both old and new, and select the best. Roses should not be pruned in autumn, for they are then more liable to be killed down, but the wood should be left on.

Benjamin G. Smith, Chairman of the Committee on Publication and Discussion, announced that the Schedules of Prizes for the year were ready, and also that the discussion of the subject of today would be continued on the next Saturday, after the adjournment of the Business Meeting. On behalf of the Committee he desired that members would hand in lists of what they deemed the best twelve, twenty-four, thirty-six, and forty-eight roses.

BUSINESS MEETING.

SATURDAY, January 15, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, President Hayes in the chair.

The following named persons were appointed a committee on the meeting of the American Pomological Society in Boston in September next, to act in connection with the Committee of Arrangements of the Horticultural Society: President Hayes, Hon. Marshall P. Wilder, William C. Strong, E. W. Buswell, and Robert Manning.

E. W. Buswell, Treasurer, read his Annual Report, including

the Report of the Finance Committee, which was accepted and referred to the Committee on Publication.

The following named persons, having been recommended by the Executive Committee, were on ballot duly elected members of the Society:

J. Montgomery Sears, of Boston.
William Power Wilson, of Boston.
John E. Russell, of Leicester.
David Allan, of Belmont.
John H. Moore, of Concord.
Edward Baker Wilder, of Dorchester.
Edwin Faxon, of Jamaica Plain.

Adjourned to Saturday, January 22.

MEETING FOR DISCUSSION.

The subject assigned was the "Cultivation of the Rose," being a continuation of that of last week.

Charles M. Hovey quoted a statement by the editor of the Gardener's Monthly, in support of his objections to the Manetti stock for roses, and said that Jean Sisley, one of the largest French rose growers' uses only seedling briers and La Grifferaie as stocks. But for general purposes the speaker preferred them on their own roots. He presented the list of roses referred to by him last week as taking prizes in England, viz., Tea roses—Maréchal Niel, Solfaterre, Souvenir d' un Ami, Souvenir de Malmaison, and Niphetos. Hybrid Perpetuals—Pierre Notting, John Hopper, Paul Neron, Baron Prevost, La Reine, Gen. Jacqueminot, Beauty of Waltham, Charles Lefebvre, Marie Beauman, and Eugène Verdier.

John B. Moore said that he knows roses do better on his light soil, worked on Manetti stocks, than on briers or on their own roots. Any one who loves a rose can easily distinguish the suckers from the grafts, and remove them. Mr. Hovey left the impression on the minds of those present last week that he considered the old roses superior to the new; but the speaker thought there had been a vast improvement, and that if we made a list today, in three years we should be obliged to strike off many kinds. Mr. Hovey classed as new roses any introduced since 1860, but of those

on his list of old kinds, the John Hopper was sent out in 1862, Pierre Notting in 1863, and Paul Neron in 1869. Good as the John Hopper is, it is more than equalled by many new ones. Mr. Barker's object in planting roses on Manetti stocks, with a view to their afterwards rooting from the graft, is to give them a start; but the speaker doubted whether they root much from the graft. He has plants on Manetti stocks, of eight or ten years' standing, and though his soil is not naturally adapted to roses, they make shoots of eight or ten feet in length. His remark, last week, that six roses in August are worth ten bushels in June had been criticised, but he did not intend it to be taken literally, but only to say that, while in June they are very abundant, in July, August, and September they are scarce and valuable. Some of the so-called Hybrid Perpetuals are perpetual, and some are not. Mme. Charles Wood will bloom itself to death. As the new growth comes out, it gives a new crop of roses. The Hybrid Perpetuals give as many roses in June as those which bloom only in June, and all the later blooms are so much advantage over the June roses.

In answer to a question, Mr. Moore said that the clay-like strata referred to by him last week as found in sand pits, are probably dried quicksand, though some farmers call it marl. Clay, when spread on land remains in lumps, but this falls to pieces. One of the first necessities of the rose is moisture; and the finer the particles of soil, the more retentive it is. His soil is naturally so light that all the water from an inch pipe would be absorbed before running a rod, but after being dressed with the substance which he described, the same quantity of water would stand in puddles or run ten rods. After getting a good soil and a supply of water, the next thing is plenty of manure, for the rose is a gross feeder. He could not afford such a border as Mr. Gray's, four feet deep and half manure, and did not think it necessary, and what the plants cannot take up is lost.

Mr. Hovey said that the subject under discussion was never tiresome to him. Those who grow roses for exhibition must proceed differently from those who grow them for their general effect. We do not want a few scattering plants of rhododendrons or pæonies—we want masses of them, and we want a feast of roses, even if every bloom is not up to the standard of perfection. Two or three plants of annual roses in his grounds, full of flowers, attracted more attention than any others. These are the kinds

for those who wish to cut bouquets of roses. With the progress of improvement we shall get better roses, and many of the old ones will be discarded. Mr. Hovey said that instead of opposing the introduction of new things he had been one of the few to purchase every novelty of any merit, and had very dearly bought many worthless things. In planting two thousand pear trees he included among them only six Bartletts. La Reine is not excelled by any other rose of its color. Niphetos is in all the stands of twelve Tea roses. With one shoot of ten buds of a new rose we can make ten plants by budding, but the stocks will sucker and rob the grafts, and when we can get them on their own roots we should endeavor to do so. In Europe standard roses, grafted high, have gone out of fashion.

Mr. Moore said that Messrs. Cranston, Turner, and Paul, three of the largest English rose growers, prefer plants on the Manetti stock for all purposes. The Hybrid Perpetuals make as great a show in the garden in June as any, and we get the later flowers in addition.

Mr. Hovey said that M. Sisley does not use the Manetti stock. The speaker thought that such roses as the immense Paul Nerons, exhibited by the President, were rarely produced without heading down the plants so early that the first crop of flowers was sacrificed. He knew a gentleman at Newport, who has a large plot of Gen. Jacqueminot, which he thus heads down for the sake of getting fine late flowers.

William Gray, Jr., being called on by the President as the "champion rose grower," said that he understood the objectof the meeting to be to get lists of the best roses, but this was impossible at so short notice. We must grow many kinds for many years before we can decide on the best. In 1874 he thought Mlle. Marie Rady the best rose of the year, but he has not had one in a prize stand since. Pierre Notting was fine, but he has not had one in his prize boxes for years. The only object in testing the new roses sent out from year to year is to ascertain those worthy of cultivation here, which are but a small proportion of the whole. Those of 1877 have not been tried long enough, but are more promising than those of several previous years. If we make lists of roses which can be relied on we must include many of twenty years' standing. Nine out of ten of the new French roses are scarcely heard of after a few years. He would have his roses on Manetti stocks, to give

them a start, and plant the stocks two inches under ground, when they would root from the graft.

Mr. Hovey said that Mr. Gray had presented actual facts which confirmed his views. We want kinds, both of fruits and flowers, whose characters are fixed and known. If any variety gives us roses only once in six or eight years, it is of little value. He agreed with Mr. Gray, that roses get started sooner on Manetti stocks.

Hon. Marshall P. Wilder commended the spirit in which the discussion had been carried on today. He agreed exactly with what Mr. Hovey and Mr. Gray had said. The Manetti stock is a wretched thief, owing to its profuse suckering. He desired to correct the impression which some appeared to have received, that he is not a progressive man. He wanted to put his hand on every new thing he saw mentioned in the newspapers, and obey the maxim to prove all things and hold fast that which is good. Few rose growers have Mr. Moore's peculiar soil, but he admits that manure is the great thing. The speaker expressed surprise that so few new roses had been raised in this country, where, under our bright sun, everything perfects its seed with ease; but we shall do it in the future. Ellwanger & Barry have crossed Hybrid Perpetuals with Tea roses, and he was glad to hear that Mr. Hovey had done the same. He exhorted all to go on and raise new roses, and then their names would go down to posterity fragrant with the results of their labors.

Mr. Hovey said that more had been done in this country in the way of raising new roses than Mr. Wilder's remarks would imply. He had lately been over the history of rose culture in this country for the last forty years, and had prepared an article on the subject for "The (London) Garden," beginning with a variety raised by Mrs. Herbemont, from the Musk Cluster, which has been one of the parents of all the improved Prairie roses. The latter were originated by Samuel Feast, of Baltimore, and Joshua Pierce, at a time which Mr. Wilder would recollect, when the Boursault was the only climbing rose. Joshua Pierce, of Washington, raised fifteen varieties. The Isabella Sprunt is a sport of Safrano, discovered by the Rev. James Sprunt, of Kenansville, N. C., some years previous to 1865. Mr. Pentland, of Baltimore, raised the George Peabody, a Bourbon rose. Prof. Charles G. Page, of Washington, raised the Cinderella, and others. William Boll, of

New York, raised hundreds, if not thousands of kinds, most of which he sent to France. Among his seedlings were the Washington and Madame Boll. In 1877, came the American Banner, a sport from the Bon Silene. Mr. Hovey said he had thought lately of attempting to raise seedling roses, but the French are so far in advance of us, that he had done little for the last twenty or thirty years.

President Hayes remarked that the veteran horticulturist, Mr. Wilder, was himself a perpetual blooming rose.

F. L. Harris said that they do not grow a great many roses at Wellesley. The soil there is similar to Mr. Moore's, but they have not the fertilizers for rose growing. The speaker questioned whether Mr. Gray, and other rose growers, had not committed an error in forcing such luxuriant growth on their plants. He would concentrate the growth in the production of hard wood; and, with this view, he used when they started away from the bud, to rub off the strong shoots. This late, excessively vigorous growth does not ripen. Last year was the worst for roses that he ever knew, which was owing to the failure to ripen the wood the previous autumn. His experience led him to advise thinning out the wood.

William H. Spooner said that, a year and a half ago, President Gray exhibited very fine specimens of the Pierre Notting rose, and the only difficulty with this variety is that it is apt to burn.

Mr. Hovey thought it would have been well to speak of this discussion as of "roses for exhibition purposes." As long as we seek to grow roses for exhibition as big as a plate, we shall get only two or three from a strong shoot. We want plenty of roses, and the secret is in well ripened wood. These excessively strong shoots come "blind," and should be taken away when young. It is hard to divert the current of sap after it has got into one of them.

Mr. Wilder said that we want to preserve for all time, those roses which have proved their title to a permanent place, such as the old Yellow Tea, which has been known for nearly two hundred years, Bon Silene, Safrano, Dr. Andry, Baron Prevost, Maréchal Niel, and similar varieties, the last named of which, he said, would endure for generations. The Gen. Jacqueminot is not a rose of high character when opened, but for certain purposes it has a high value. A hundred thousand flowers of this variety are sold in a year. This rose has taken its place.

The President gave notice that on the next Saturday, John E. Russell, Secretary of the State Board of Agriculture, would speak on "Tropical Fruits and Flowers," and expressed a desire that the community might be better informed of what the Society is doing to disseminate horticultural information by means of these discussions, believing that if the interest of the meetings were understood the room would be crowded.

BUSINESS MEETING.

SATURDAY, January 22, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, PRESIDENT HAYES in the chair.

The President announced the list of Special Prizes for Essays, offered by the Committee on Publication and Discussion for the current year, with the approval of the Executive Committee.

Adjourned to Saturday, January 29.

MEETING FOR DISCUSSION.

Agreeably to the announcement on the previous Saturday, John E. Russell, Secretary of the State Board of Agriculture, spoke on Tropical Fruits and Flowers. A severe snow storm prevented as large an attendance as usual, and Mr. Russell remarked that while he would have been pleased to see the room filled, he was surprised that so many persons were present. He feared that he should be unable to dispel the cold and gloom of the storm by stories of tropical warmth. "Who can hold a fire in his hand by thinking of the frosty Caucasus?"

Some time ago he spent several years on the isthmus which has no special name, extending seven hundred miles from Yucatan to Darien. This differs from any other part of the tropics. We speak of Southern Georgia and Florida as sub-tropical, and of the leeward and windward islands of the West Indies as thoroughly tropical, but all these are exposed to cold blasts from the north, which carry such a chill that in Cuba, where there was no fire except in the kitchen, and no means of keeping warm, he went to

bed to escape the effects of a "norther." During the present winter, orange trees have cracked with the frost in Florida, and he had noticed the same thing in Louisiana — a damage, however, which is easily repaired. But Central America, south of Cape San Antonio, is beyond danger of cold blasts from the north. The waters of the Carribbean Sea are never chilled, and the climate of Central America does not vary more than five or six degrees; the lowest the speaker had noticed was 75°, and the highest in the shade, 82°. Here, we consider such a temperature agreeable and equable, and the speaker, when sweating on the hills of Worcester county, under a higher temperature, had longed for the tropical sun of Central America to cool off in. There, there is never a blast that can destroy vegetation.

Though the isthmus is only one hundred and seventy-five miles wide, it possesses a great diversity of climate. On the Atlantic coast it rains every day, while fifteen miles inland, the rainy season begins in April and ends in November. The rain does not fall incessantly, but so regularly every day that the hour can almost be fixed, and arrangements can be made for picnics or horticultural exhibitions without fear of interruption from the weather. These table lands are the inhabited lands of Central America. The speaker was much interested in the remains of ancient races found in these countries — cities, palaces, and hieroglyphics which could have been made only by a highly civilized people. In the depths of the forest the explorer meets the images of forgotten gods, and almost expects their worshippers to reappear.

The temperature of this region is about that of a conservatory here; and the luxuriance of the tropical vegetation language utterly fails to describe. A single plant will present the appearance of an enormous lilac or rhododendron, with gay bulbous and other flowers beneath, and vines over all, and orchids interspersed. The climate and soil produce indigenous plants of the greatest value to mankind, among which are maize and the castor-oil plant, which grow in the greatest profusion.

Mr. Russell next gave a description of particular plants, beginning with the pineapple. Few people are aware of the manner of growth of this so-called fruit, which is not a fruit in the common acceptation of the term, and botanically is described as a multiple or collective fruit, the constituent flowers having become sterile

and seedless, and all their parts, along with the bracts and the axis of the stem, blending into a fleshy and juicy mass. The pineapples sold here, which are necessarily plucked before they are ripe, will not compare with those ripened and eaten in the tropics. They can be grown of equally good quality in hothouses here, and the speaker had seen in Covent Garden Market, London, as fine pineapples as ever were grown in the tropics — large, fleshy, thin-skinned and juicy. In the tropics every one can raise them, and they are exceedingly useful fruits. They may be said to be drunk rather than eaten. They are chopped in small pieces, and sugar, oranges, and lemons added, and some add cane rum or French brandy. As there is no ice there, the mixture is cooled by swathing the jar in which it is placed in wet woollen cloths and hanging it in a draft. The spirit extracts the juice of the fruit, and when it is sufficiently cooled, champagne is added, and then is the time to drink it.

The most prominent feature of tropical vegetation is the palm-tree. No trees are more valuable; none are more beautiful, romantic, and dreamy. The comparatively small plants seen in conservatories here can give but little idea of their beauty and grandeur. The cocoa palm is at once the most beautiful and valuable of all. When the seed is placed in the ground it springs up in the form of a long narrow leaf, the type of the monocotyledonous plants, and ultimately rises to a great height; the speaker had seen them a hundred and twenty-five feet or more in height. They have no branches, but blossom forever. A single tree will yield fifteen or twenty quarts of juice, from which palm wine is made. Besides the use of the fruit for food and other purposes, the leaves are used for thatching roofs, and the outer shells of the nuts afford fibre for cordage. Altogether, it is the most glorious and valuable production of the tropics.

The cocoanut palm is not indigenous in Central America. The most valuable indigenous production is the cacao tree, from the fruit of which chocolate is prepared. The description given by the Spanish discoverers, of the drinks used by the natives, indicate that this was early known to them. The cacao tree grows about as large as a moderate sized plum tree, and is exceedingly beautiful. They are raised in nurseries, and afterwards planted in orchards, and by the side of each a banana is set to shade the young cacao tree, until it is five or six feet high. Most tropical

plants when growing wild, must spring up in the shade, and, consequently, when raised by art, they must have shade afforded them artificially. At intervals in the orchards is planted a tree called "madre de cacao," (mother of cocoa), a species of *Erythrina*, or coral tree. It sheds its leaves towards the end of the dry season, and during the wet season flames out into crimson flowers, resembling those of the gladiolus, and in such numbers as to completely cover the tree. It thus affords abundant shade during the whole year; and to give this shade to the cacao trees is the object in planting it. On the plantation of the Lacayo family, "Las Malaccas," the "mother trees" are old, and more than seventy feet high, and in May, the first rainy month, are all in gorgeous blossom. When these trees are seen from an elevated position, mixed with the green of the banana, a cacao orchard affords a sight, not merely of beauty, but of wealth. The flowers of the cacao tree itself are borne in bunches, and are of a delicate pinkish white. The trees are very infertile, producing only from twenty-five to thirty ounces of seed in a year. The seeds are borne in a pod shaped very much like a cucumber, and are embedded in a pulpy substance which is very pleasant to eat, and this is known to the monkeys, which give the proprietor of an orchard a great deal of trouble to protect his trees from them. No one here has ever tasted pure chocolate. No substance in the world bears so much extension; a very small quantity will impregnate with its flavor a great deal of arrowroot, or similar harmless substances; or fats, such as oleomargarine. The Nicaragua cacao is the best in the world. The French chocolate manufacturing firm of "Menier," acquired a large tract of land in that country for the purpose of producing it. The native method of preparing the cocoa, is by putting it in gourds six or seven inches deep, with some fine corn meal, and stirring it with a stick, when it rises above the mouth of the gourd in a foam stiffer than that of strong ale. It is almost always drunk cold. The word "chocolate," is derived from two native words, *choco* and *latl*, the former of which resembles the noise made by stirring the chocolate in the gourd—a very pleasant sound to hear when riding up to a house on a hot day—and the latter signifies "drink."

Coffee was introduced very early in the time of the Spanish occupation. It is cultivated in orchards, like the cacao, and the blossoms, which are always on the tree, have an indescribably

delicious fragrance, so that a walk in a coffee plantation in a moonlight evening, is most delightful. It requires seven years from the planting of the orchard to get a crop. The seed is enclosed in a pulp like that of a cherry. Formerly this pulp was separated from the seed by hand after drying, but machines have been invented for doing the work, which have much reduced the price of coffee. Each berry has two seeds, which, as is well known, are flattened on the sides where they come together, like half a cherry stone. The so-called "male berry," is produced when one of the two embryos is abortive, and is raised on comparatively arid soils, at higher levels.

The cactus is always present in Central America — sometimes inconveniently so. It forms a positive fence, fulfilling the requirements of the western man who wanted a fence, "horse high, bull strong, and pig tight." No animal ever bites a cactus; sometimes they bloom magnificently, and some of the species bloom at night. A species of upright, columnar growth, is used to make corrals for cattle, and in an incredibly short time the stems crowd together, forming a solid wall a foot or two in thickness. If it is too high, the tops are cut off and then the plants bloom all over with gorgeous scarlet flowers.

In the great forests, under the shade of the trees, is the most wonderful display of air plants. They grow in every place where they can possibly fasten their roots on the trees. The speaker saw in a conservatory a short time previous, a plant valued at hundreds of dollars, which the owner told him had been in bloom for seven months; but, in that climate without a season, they grow with a vigor and luxuriance which cannot be equalled in conservatories. The vigor of the cactus is such that you can set bounds to the forest with it, and along the pathway between cactus hedges grow begonias and abutilons in the greatest variety and profusion. The portulaca, jasmine, and tuberose are common weeds. The fragrance is indescribably delicious. The vanilla of commerce is an orchid which is cultivated, and likes a cooler climate, but there are other species of that genus which grow wild, and when their seeds ripen they fall and decay, and add their fragrance to that of the flowers. But there is one tree whose fragrance overpowers that of the tuberose and jasmine; it is known as the "bedbug tree," and has an odor like that of ten thousand tavern bedsteads. Fuchsias hang from the trees in great strings, and the speaker in passing under them had cut down thousands with his riding whip.

But the most striking scene is when the convolvulus gets its opportunity. Some enormous mahogany, or other tree, becomes a prey to gigantic vines, which climb up and strangle it, and the tree dies but cannot fall, and becomes covered with great broad-leaved plants which root in its substance. But at length a tropic gale takes it over, and the ruins form a vast mound, covering perhaps an acre, among which birds drop convolvulus and other seeds, and if you walk out early in the morning you find it all alive and ablaze with blossoms, but in an hour the gorgeous show has faded.

Mr. Russell's lecture was warmly applauded at the close, and the President said that all had listened with the greatest interest to his description of tropical vegetation, which had carried us in imagination to those gorgeous scenes. He wished the audience had been larger, but said that all present would feel rewarded for braving the storm.

O. B. Hadwen moved a vote of thanks to Mr. Russell, for his able and interesting address, which was unanimously carried by a rising vote.

Benjamin G. Smith, Chairman of the Committee on Discussion, announced for the next Saturday, a discussion on the "Fruits best adapted for Market Purposes," to be opened by E. W. Wood, Chairman of the Fruit Committee.

BUSINESS MEETING.

SATURDAY, January 29, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair. There being no business before the meeting, it

Adjourned to Saturday, February 5.

MEETING FOR DISCUSSION.

The subject assigned for today, was the "Fruits best adapted for Market Purposes." It was opened by E. W. Wood, Chairman of the Fruit Committee, who said it was unfortunate that the fruits of our cold climate should follow the glowing description given of tropical fruits and flowers last week. In assigning the subject of today, the Committee had in view its practical bearings, and no subject is more practical than this. A few years ago, the fruit grower here was sure of a market without competition, but now things have so changed that the cultivator must change his methods. The business of growing and marketing fruits requires as much brains as the business of a manufacturer or a merchant.

In considering the question what can be grown profitably, the advantages of location must be taken into account, not merely with respect to the character of the soil, but to the demand and supply, the nearness to market, and the facilities for transportation.

The apple is the leading market fruit, and though many farmers felt almost disgusted at the abundance of the last crop, the speaker believed that an outlet would be found for the superabundance by exportation to foreign countries. Two years ago, as Chairman of a Committee on Apple Culture and Exportation, he reported that exportation seemed to solve the problem of the disposal of our surplus apples, and the experience of the last year had confirmed this view. Mr. Wood here referred to the statement in the address before the American Pomological Society by President Wilder in 1877, that the foreign market for American fruits is now as well established as that for our wheat. Since the month of October last, there have been shipped to foreign ports, 396,000 barrels of apples, though few farmers will believe it.

Mr. Wood read the following paragraph from a late number of the Boston Herald: "There are plenty of apples in the market, and shipments are made every week for Liverpool or Glasgow. One of the latest circulars from Liverpool speaks of the apple as 'by far the most important article of green fruit this season.' The receipts at Liverpool in four months were 584,476, or more than half a million, barrels — nearly double the amount of any former exportation. The fact of the English crop being a very small one has, of course, materially assisted the consumption, and it is an

undoubted fact that this season American apples have been used in several districts of England that have never before taken them. The satisfaction they have universally given will lead to a very large demand in future years, no matter what the English crop may be.'" He thought this most conclusive evidence that the prediction of the Committee had been verified. Farmers planting orchards should carefully consider the best varieties for exportation. The Newtown Pippin is the best known American apple in England, but it does not succeed in New England, and in the last six years other kinds have become known in England. The kinds which the speaker recommended most highly for exportation, were the Gravenstein, Hubbardston Nonsuch, Rhode Island Greening, Baldwin, and Roxbury Russet, and these five kinds are also the best for our own market. Mr. Wood referred to a statement made by him in a discussion two years ago* in regard to a gentleman who shipped to England 750 barrels of Baldwins and Hubbardstons, which returned a net price, after deducting freight, of $1.50 a barrel, the Hubbardstons bringing most, and who intended to graft a hundred more trees of the latter variety. This last year the same gentleman exported 2000 barrels, of which the first shipment, during the second week in September, brought $2.50 net, and the second shipment, $2.40. The second quality brought $1.25. Mr. Wood asked: What can be grown more profitably than apples at these prices?

The apple must be a farm crop. Those whose land is taxed for its prospective value cannot afford to grow apples. Large cities must depend on farms for their supply. The apple is the easiest of all fruits to grow. Most apples are grown in mowing fields, but the best can only be grown in grass under peculiarly favorable circumstances—by roadsides for instance. The roots of the grass intercept any top-dressing that may be applied. An orchard does not require the best land; rough and springy hillsides make the best sites. An orchard on a southerly hillside gets more air, light, and sun than one on level ground. The trees should be planted when four years from the bud, and the ground should be cultivated with root crops for six or eight years, and should afterwards receive frequent light dressings of manure, and should be kept light. The trees recuperate in alternate years. The best fruit in an orchard is found on the outside rows.

* Transactions for 1879, Part I, page 67.

The pear is next in importance to the apple. It is impossible to add anything new in regard to the best varieties, but new cultivators appear every year who ask what varieties are most desirable. To such the Society furnishes much valuable information by its exhibitions, and it can do no more important work. Novices should look over the published TRANSACTIONS, and see what varieties are most highly recommended. Many varieties growing under particular circumstances become favorites with amateurs, but the list of varieties desirable for market may be reduced to a very small number. From his own experience in growing pears, and from observation of the exhibitions of the Society for fourteen years, the speaker recommended the Clapp's Favorite, Bartlett, Sheldon, Beurre Bosc, Beurre Clairgeau, Duchesse d'Angouleme, and Beurre d'Anjou. The Clapp's Favorite is the earliest kind which can be considered a market variety, for though there are earlier kinds they are too small for market. Within the last five years it has suffered from blight. The Bartlett is too well known to require anything said of it. It does not suffer from blight. The Sheldon is comparatively new, of excellent quality, a strong, vigorous grower, and, though formerly subject to cracking, has lately been free from it. The Beurre Bosc is growing in favor for market. It is a free grower, and bears large, fine, handsome fruit. The Beurre Clairgeau meets many objections. No one would think of putting it on a list for amateurs, but it is a strong grower, and one of the largest and handsomest of all pears, and meets a specific market among the first-class hotels and restaurants, bringing there as high a price as the Beurre d'Anjou, but the hotel keepers prefer it to that variety, because it lasts longer on the tables. It is largely planted by the Revere growers. The Duchesse d'Angouleme, Mr. Wood said, he would discard sooner than any other on the list. The best specimens are from trees on the quince stock, and it requires a moist, strong soil, such as is suited to the quince. It must have higher cultivation, and more food than any of the others named. Of the Beurre d'Anjou he said it was unnecessary to speak in the presence of Mr. Wilder, who introduced it into this country.

If greater variety is desired, the Beurre Hardy, Seckel, Doyenne du Comice, Dana's Hovey, and Vicar of Winkfield may be added. Beurre Hardy is a good grower, and the fruit is fair and handsome, and of good quality. The Seckel is the standard of quality. To

get good sized specimens the fruit must be thinned thoroughly; and if a man has twenty Seckel trees in full bearing, he will have twenty days' work thinning them. The Doyenne du Comice is not excelled for size, beauty, or quality; the only question is in regard to its productiveness. Some growers have found it one of the most productive varieties. It is grown more largely at Worcester than here, and the speaker had never seen trees more handsomely loaded than some of this variety there. Like the Bartlett it forms its flower buds at the extremity of the shoots. To Dana's Hovey there is the same objection as to the Seckel. The fruit grows in clusters, but when thinned they become, in the words of Charles Downing, "Winter Seckels." The Vicar of Winkfield sometimes brings three dollars per bushel, but not often. The fruit needs thinning, but this does not take so long as with smaller varieties. It is a vigorous grower, and makes an excellent stock for grafting other varieties on. The Beurre Clairgeau was mentioned particularly, as doing well when thus double-worked. One large grower lately set out five hundred trees of the Vicar, most of which he intended to graft, as the farmers in Sherborn set out Baldwin apple trees and graft with the Roxbury Russet, finding they can get a tree in half the time it takes to rear one from the nursery.

In the last two years many peaches have been exhibited here, and the crops have been remunerative, and it is probable that an unusually large number of trees will be planted the coming spring. It is difficult to name the best varieties, and the speaker suggested whether we might not produce improved varieties by planting the seeds of the best kinds. A large proportion of the trees are affected with the yellows, the first indication of which is the high color and premature ripening of the fruit, before the disease is shown in the leaves. The buds and seeds carry the contagion, and hence in propagating by either, care should be taken that they are from perfectly healthy trees.

We live on the extreme northern boundary of the grape region, and should aim to lengthen the season by choosing the most favorable situations for the growth of this fruit. Dr. Fisher, the leading grower for market, says that by means of a southern aspect, we can gain the advantage of a climate two hundred miles further south. The varieties eligible for market culture are very few. At the head stands the Concord, of which Dr. Fisher says that if it were wiped out, grape culture for market would cease here.

Moore's Early, though not tested in all soils, has been sufficiently cultivated to come next. The speaker had seen it for the last six years, though not under particularly favorable circumstances, ripening two or three weeks earlier than the Concord, and equally as good in quality. The only question in regard to it is whether it will do as well under all conditions. The Worden is not tested here so much as west of us; at Worcester it is grown more than any other kind, and is large and handsome, and said to be as early as Moore's Early, and not to mildew. Other new varieties are being introduced, and the speaker thought we must look for improvement in pure native seedlings, and not in hybrids. The latter will do for amateurs, but not for market. There is not a single hybrid that does not suffer more or less from mildew. Many persons will be deceived by the favorable season last year, and plant them, but they will be disappointed three years out of four.

In strawberries also, the amateur may indulge his bent, while the grower by acres will select carefully. The Charles Downing stands at the head of the list for market; the plants are vigorous and prolific, and the fruit is of good size, and the second and third pickings hold out in size. The Wilson, which for the last ten years, or more, has been most reliable for money, has lately failed in some localities, and now stands second. Few persons who buy their strawberries have ever eaten a ripe Wilson. When fully ripe, it is of a very dark crimson color, and of fair quality; before it is ripe, it is bright scarlet, and it is picked then. It has size, color, and form, and bears transportation well, and will grow anywhere, and produce more on light soils than any other variety. The Seth Boyden (Boyden's No. 30), may be placed next, though it has not been so generally grown as the two preceding. After the first picking, the best berries are gone; there will be good ones in the second and third pickings, but not as many as with the Charles Downing or Wilson. The only new variety named by Mr. Wood was the Sharpless, which as yet has been shown here only by the Arlington and other cultivators, who grow everything well; but all indications point to it as the most promising new kind. It is said to be among the most prolific. The Crescent Seedling is recommended as growing anywhere, and as a weed-killer, which is undoubtedly true, but in quality it is inferior to the Wilson, and that of the Wilson is as low as the Fruit Committee dared to go.

Blackberries always command a ready sale at good prices. The greatest difficulty in their cultivation is in carrying the canes through the winter. The Dorchester and Kittatinny are two of the best. The latter is the hardier; though it winter-kills some, there are generally plenty of canes left.

Of raspberries, as seen here, Mr. Wood recommended the Franconia, Clarke, and Herstine. The first is well known. Some might take exception to the Clarke, but he had seen the best success with this variety. A neighbor sold six hundred dollars' worth from a third of an acre. The Herstine is new and prolific, and commands the best price.

In looking back over the list of fruits recommended, Mr. Wood noticed the suggestive fact that four out of the five apples recommended, are natives of New England, and that three of these originated in Massachusetts. Of the twelve pears named, four are of American origin, and two of these are from our own vicinity. This points out that we should look for improvement in native seedlings, rather than in foreign varieties.

The discussion and practice of fruit growing afford a great deal of pleasure as well as profit. All who have engaged in it will agree with A. J. Downing, that, "fine fruit is the flower of commodities: it is the most perfect union of the useful and the beautiful that the earth knows. Trees full of soft foliage; blossoms fresh with spring beauty; and, finally, fruit—rich, bloom-dusted, melting, and luscious—such are the treasures of the orchard and the garden, temptingly offered to every landholder in this bright and sunny, though temperate climate."

Discussion.

Hon. Marshall P. Wilder said that he had been exceedingly interested in the able and practical remarks by the Chairman of the Fruit Committee, and agreed generally with his views. The subject is so broad that he hardly knew where to begin. Thirty years ago he began to preach to fruit growers to raise native seedlings, adapted to their own locations, quoting the advice of Van Mons to "sow perpetually." For thirty years the Newtown Pippin commanded the highest price for exportation, but now there are a hundred Baldwins planted to one Newtown Pippin. Everywhere, except in the South, the Baldwin receives the highest marking, and we shall raise others as good.

Mr. Wilder said that he had had more experience with pears than with apples. As we progress, the list of the best varieties will change. He thought he had had more experience than any other person with Clapp's Favorite. It was said by some to rot at the core, and it made him indignant to hear it. If it did it was caused only by the want of care and skill on the part of those who make the complaint. They do not realize how early it is, and do not pick it early enough. Here, it should be picked by the 15th of August. All early pears must be picked before they are ripe. The Sheldon, Merriam, and Buffum are valuable market pears, but not one of all the thousands of varieties imported has come up to the Beurre d'Anjou. It had been his most profitable variety the last season, bringing $2.50, $2.75, and $3 per bushel, with the last sales at $6. After the Bartlett, in value as a market pear, comes the Doyenne Boussock. It is a vigorous grower, and makes an amazingly large tree. He picks one half early — before they are fully grown — and ripens them off for market, and those left attain a fine, large size. The Buffum also should be picked early; he picks half his crop the first of September. When thus treated it yellows finely, and is just the size for market, and was pronounced by A. J. Downing nearly as good as the Seckel. He has trees of this variety that produce an average crop of not less than five barrels, and one tree has borne twenty-two bushels. He has had the same experience with the Merriam; and Mr. Hovey, who formerly differed from him in regard to the value of these fruits, has come round to his ideas. Merriams, picked early, are luscious; if not picked early they become yellow, with a red cheek, and hang on the tree; and though they grow larger, they get a little mealy. This and the Buffum are both natives. Mr. Wilder said he could do nothing with the Duchesse d'Angouleme, but Patrick Quinn, of New Jersey, raised two thousand bushels last year, for which he expected to get five dollars per bushel; and a gentleman at Brighton had four hundred bushels. Taking the country through, it is the largest market pear, and one of the most popular.

Mr. Wilder said he had often been called to account for saying that if he could have but one pear, he would plant a Vicar of Winkfield; but this was many years ago, when we had fewer varieties than we have now. All agree that it makes one of the most beautiful trees. He had one tree that produced five bushels, which were in eating from October to April. The late Samuel Walker, who

was for seven years Chairman of the Fruit Committee of this Society, expressed the same views, and Mr. Hovey considered the large specimens very valuable. They had sold for ten dollars per barrel, and the finest brought three dollars per dozen; but the tree must have age to produce such. This was thirty years ago. Dana's Hovey, another American variety, and the Seckel, are preëminent for quality throughout the world. We may get larger varieties of equally fine quality, by sowing seed. The Doyenne du Comice has done tolerably well with the speaker, but when it has once fruited it will not soon bring a fruit bud again on the same spur, and the terminal wood is liable to be killed.

Mr. Wilder differed from Mr. Wood in regard to foreign blood in grapes. He remembered when hybridization was first practised on grapes, and some of the persons who then laughed at it now admit its happy influence. We do not want too much foreign blood mixed with the native. He had never seen a grape — not even the Concord — absolutely untouched by mildew, but he had seen none to do any injury on the Wilder, Lindley, or Massasoit. The Brighton, which has one-quarter foreign blood, has never mildewed with him in six years. There is nothing but is subject to disease in some seasons, and we must have regard to these facts. The Concord is the grape for the million; Moore's Early is two weeks earlier, and the vine is of great vigor, and the speaker hoped it would prove of better quality than the Concord, and adapted to as wide a range. Half a million barrels of apples have been exported from Boston the past season, and we shall soon send native grapes as well as apples. The early varieties may be grown in England. The Hervey Davis is one of the most promising strawberries. The Crescent Seedling is pretty good to eat when you can get nothing else, and it is a pistillate variety which may become the mother of a valuable race, possessing the same hardiness, vigor, and productiveness, with better quality. The speaker had seventy plants in pots of Crescent Seedling, Hovey's Seedling, and other pistillate varieties, which he intended to fertilize with the best kinds. The art of hybridization can be practised by every one, and we are raising thousands of new fruits by its agency.

John B. Moore thought the list of apples presented by Mr. Wood a very valuable one. The Roxbury Russet is peculiar in its wants, and does not do well on his own grounds; the fruit is apt to be wormy. It wants a stiff soil. The Gravenstein is universally

popular. The Hubbardston Nonsuch is also peculiar; but, unlike the Baldwin, it will grow anywhere. The original tree, which the speaker had visited, stood in an orchard of natural trees, on a west slope in cold, wet, springy land, and it will succeed in such land, while the Baldwin and Hunt Russet will not, and on warm soils also. It is not adapted for exportation, because it is in use only a short season. The Hunt Russet originated in a warm soil. Fruits originating on such soils require warm soils to grow in, while those originating on cold soils will grow anywhere. The Hunt Russet is one of the hardiest varieties. The Rhode Island Greening has something the same traits as the Roxbury Russet, and wants a clay soil. Mr. Moore thought Mr. Wood's list of pears a good one, except the Vicar of Winkfield, which is only a cooking pear. The tree is beautiful and vigorous, and the fruit looks well in the box or barrel, but does not taste well and does not sell well.

Mr. Wilder remarked that the Massachusetts Agricultural Club had a plateful of Vicars placed before them, which they thought as good as any variety.

Mr. Moore replied, that Mr. Wilder, in speaking of the Vicar, put in a qualification which he did not. He had had a crop of fifty bushels. You may sell them to a man once, but you cannot a second time. The Buffum is the same; the tree is beautiful and productive, and the fruit is not the worst that ever was. Dana's Hovey has only one fault — it is not large enough. The tree makes stout, stubbed shoots, but does not extend rapidly. If planting only six pear trees, he would have one of them a Dana's Hovey.

Mr. Moore agreed with all that had been said of the value of native fruits. He had seen the Wilder, Massasoit, and Barry grapes mildew to such an extent that the crop was spoiled. The solid, substantial improvements in grapes have all got to come from pure natives. He did not know much about the habit of the Worden, but thought it promising.

Miner's Great Prolific is one of the most promising new strawberries; one-third of Mr. Moore's planting last year was of this variety. It is not as soft as the Charles Downing. He has a far better opinion of it than of the Sharpless; the first berries of the latter are large but homely and tasteless. The Wilson is grown largely at Concord, but it is going out of favor. Mr. Moore cannot grow them on his low land, but can on the hill. They bear

transportation better than any other variety. The fruit is picked when it is red, before it is ripe. Some people think it is one of the finest strawberries, but it requires two boxes of sugar to one of fruit. Though the Seth Boyden has been in cultivation many years, it has not much hold on market growers. The Crescent Seedling is soft and of poor quality.

The Wachusett Thornless blackberry has been planted by growers in Mr. Moore's neighborhood, and is succeeding. It is pretty free from thorns. The Kittatinny is more hardy than the Dorchester, and the Wachusett more hardy than the Kittatinny. He had known the Wachusett to be winter-killed, though Mr. Hadwen had not. It does not come up in size, but there may be a hardy race, with larger fruit grown from it, as the parent. Mr. Moore asked why no one had improved the blueberry and huckleberry. One variety of blueberry has long racemes of flowers, as beautiful as those of the lily of the valley, and is more beautiful as an ornamental shrub than many that are planted for ornament. He had sown the seed, but never succeeded in making it vegetate.

Mr. Wilder suggested scalding the seed.

O. B. Hadwen, wished to stand up and commend Mr. Wood's opening address. He had never heard one that he could take so few exceptions to, and so concisely expressed. He thought the Sutton Beauty combined more good properties as a market apple, than any mentioned by Mr. Wood. It is of fine quality, keeps well, bears as well as the Baldwin, and outsells the Baldwin in Worcester by a dollar per barrel. It originated in the town of Sutton, ten miles south of Worcester. The Palmer Greening or Washington Royal resembles the Newtown Pippin, and is the peer of that famous variety. It is in good eating condition from December to May. Mr. Hadwen commended the Wachusett blackberry; it has taken the highest prizes in his section; is perfectly hardy, wonderfully productive—more so than any other variety—and, though not so large as some, is large enough, and the quality is good enough.

Charles M. Hovey said that he had never made a business of cultivating market fruits. He did not want it to go out from the Chairman of the Fruit Committee of this Society that the Wilson strawberry is fit to eat at all. He supplies his neighbors with a few strawberries, perhaps two or three hundred boxes, and in two or three instances, a few Wilsons were sent, and nobody wanted them

a second time. It is only valuable for cooking. One of the Fruit Committee thinks the Merriam pear is not worth eating, but Mr. Hovey could not agree with him. About twenty-five years ago, the late William B. Kingsbury brought him the first specimens he had ever seen, which were not good; the next year they were nearly first-rate, and he grafted twenty-five or thirty trees, and wishes now that he had grafted more. It will sell better than the Beurre d'Anjou. The first time he saw the Sheldon it was brought to the meeting of the North American Pomological Convention, at Buffalo, N. Y., in 1848. It was pronounced by Patrick Barry, and others, the Gray Doyenne, but he ascertained the history of the tree, and was satisfied that it was new. He procured some scions, with which he grafted three hundred trees. He then thought it the finest pear he ever ate in his life, and there are few that equal it today. The Vicar of Winkfield will bring two or three dollars per bushel, in a scarce year, if the specimens are good.

Mr. Wood replied to Mr. Hovey's criticism on his recommendation of the Wilson strawberry for market, that we could not ignore a variety sold to a larger extent than any other.

Benjamin G. Smith remarked that the King of Tompkins County apple is highly esteemed in London.

Mr. Wilder alluded to the Pocklington grape as a new variety, giving promise of value for market. It sprang from a seed of the Concord, saved and carried home by a lady. The vines in Mr. Pocklington's grounds ripened their wood and shed their leaves so early that he pruned them on the 15th of September.

President Hayes said that George S. Curtis, one of the largest dealers in fruit in Boston, when his advice as to the best apples for a market orchard was sought, recommended half Baldwins, and Gravensteins next; but on second thought advised three-quarters Baldwins, and then went on discussing until he concluded that it would be best to plant all Baldwins. The Baldwin is the best stock to graft other varieties on, and it is easier to cultivate the ground under the trees than under most kinds. Large orchards in Western New York have been planted wholly with the Baldwin, on Mr. Curtis's recommendation.

It was announced that on the next Saturday the question, "How shall Southern Competition in the Small Fruit Market be met"? would be discussed, and the desire was expressed that it should be

understood that these meetings are open to all, and that all interested in the subjects discussed are cordially invited to attend.

BUSINESS MEETING.

SATURDAY, February 5, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair. No business coming before the meeting it

Adjourned to Saturday, February 12.

MEETING FOR DISCUSSION.

The subject assigned for today was "How shall Southern Competition in the Small Fruit Market be met." The President called first on William C. Strong, who said that he was wholly unprepared, and, therefore, spoke with hesitation, but expressed the view that competition should be met in a determined spirit. We can grow small fruits here as well as the Southern cultivators, and though they employ a very cheap class of labor, we can also produce fruit very cheap. It has been said that apples do not pay, and if the time of all persons were as valuable as that of some, they would not, but if we select the right locations, away from cities, where land is not taxed for a prospective value, and with suitable soil, we can produce apples at a fair profit, at a dollar and a half per barrel. So with small fruits,—if we set about their cultivation in the right way we can produce them at a profit. But it must be done systematically, and too large profits must not be expected. Raspberries have a local value, for they cannot be sent even from New Jersey. No other small fruit bears so high a price, or will pay as well here. If we put brains into our work, the twenty-five or thirty cents per quart which raspberries bring, will afford a good profit. Cultivators must put as much thought into their work as merchants and manufacturers do into theirs.

William H. Hunt said that the subject of discussion was one in which he had taken much interest. He agreed with Mr. Strong with regard to the profit. He had cultivated strawberries, raspberries, and blackberries, at Concord, and had found them all

profitable. He had discovered some points in the cultivation of raspberries, which if he had found them out sooner would have been of great value to him. He had them planted on a hillside where they succeeded well, and afterwards set them on a flat at the foot of the hill, where the soil was better, but was much disappointed to find the result very poor there. He thought they should never be planted on low, flat land. This land was not wet; water would not stand there. In raspberry culture we are free from the competition of a Southern crop, but the liability to rainstorms, at the time of picking, is a drawback. The storms are particularly injurious when they occur the last of the week. Mr. Hunt thought raspberries must be still more profitable nearer Boston. The land where he raises them at Concord is worth about one hundred dollars per acre. He covers all his in winter, and does not believe there is a red raspberry in existence that will stand severe winters without covering. The Franconia is the best variety; it possesses the firmness which is necessary to a market berry. He had tried other kinds but discontinued them soon. Some raspberries will endure some winters, but none will stand hard winters. He thought some winters would kill the wild raspberry.

The growth of his raspberries was not more luxuriant on his flat land than on the hillside; the latter was moist, but well drained. The canes in both fields were killed if not covered. On the low grounds the buds were killed when they were uncovered, and the tops were mostly killed. The crop never more than paid for the year's cultivation. On the hillside he never failed to get a crop. Although his raspberries failed on the flat land, one of his neighbors has always been successful on similar land. The frost may have taken his before the wood was ripe; they retained their leaves longer than elsewhere. It is not so much labor to cover raspberries as people suppose.

Strawberries raised here come in competition with those grown at the South; still, Mr. Hunt thought they could be raised here at a profit. He thought farmers near railroad depots could cultivate them to advantage. For two years he kept an account of the expenses and income of his strawberry patch of seven-eighths of an acre. One of these years, which was the best he ever had, it produced a trifle over nine hundred dollars' worth, while all the expenses were included in four hundred dollars. The variety was

the Wilson, and he was glad to hear a good word spoken for it last week. Eight years ago it was the only variety from which he got any profit. He has no doubt there are many better ones now,—it is far from perfect, but it is hard, so as to carry well. The berries do not waste in long rains. Growers are obliged to pick them before they are ripe. The Charles Downing, under the same culture as the Wilson, produced only one dollar's worth where the Wilson produced three. The Wilson has gone out of favor at Concord, but one of the largest growers still adheres to it. Last year he set out Wilsons, but the plants were weak, and made few runners. He could not say whether it had run out, but he meant to get some good plants and see.

He has always cultivated the Kittatinny blackberry, and had a fine crop last year. Once in from two to four years the canes are winter-killed. Some seasons it bears a moderate crop at the usual time, and afterwards a second crop; it is not profitable then. He has not fruited the Wachusett, but has seen it; and though the fruit is smaller he thinks it will bear more quarts than the Kittatinny. He thinks Massachusetts farmers can grow blackberries profitably if they can get a hardy one. It is impossible to cover the canes. If we are to meet Southern competition, it must be by the best varieties and improved culture. The most serious difficulty is that we have to pay the highest prices for labor—ten cents an hour for women and children—and it is difficult to get at that price. We cannot drive out Southern competition, but we can meet it.

Hon. Marshall P. Wilder wished to inquire what the Southern competition is that we have to meet.

Charles F. Curtis said that it was mostly in strawberries and blackberries, and but little in raspberries. Few of the last arrive in good condition, while the Southern blackberries furnish almost the whole supply. He thought that from one-half to three-quarters of the strawberries sold in Boston market came from south of New York. The greater part of these are Wilsons, and this variety is also grown by those in this State who have to send them some distance to market. Florida berries should be here now; a few have been sent to New York. The price depends on the condition; they may come in good order for three or four days, and then there will be a bad spell, and they will average from twenty-five to thirty-three and a third per cent. less for

Southern and New Jersey fruit. The "native" berries ripen rapidly in warm weather, and sometimes Connecticut berries come in bad condition.

Mr. Wilder thought the Southern competition was not injurious, but beneficial. We get strawberries from the South a month or six weeks before they are ripe here, and though the Wilson and Nunan are not much esteemed, they are acceptable in the absence of better. They do not command as high a price as those grown here. The speaker thought it a great advantage that we could have these early fruits, and they create an appetite for our own when they are ripe. The prolonging the season is very desirable, not only with respect to the strawberry, but other fruits. The new strain of peaches lately introduced has lengthened the season of that fruit, and it is desirable by scientific means to raise varieties of that and other fruit which will prolong the season still further. Peaches are sold for a cent each here which would cost sixpence each in England. The case is the same with blackberries as with strawberries; we can get them from the South a month earlier than we can raise them here. We can compete with the South in this fruit also if we plant them, but no one here has planted them by the fifty acres, as is done at the South. The Snyder blackberry is very hardy,—the speaker had never heard of its needing protection,—and it is an enormous bearer. The Wachusett Thornless is very nearly hardy. All can be made to stand the winter better by nipping the canes when three or four feet high, and, if the laterals grow too strong, nipping again. The Dorchester and Lawton never fail with the speaker; they grow by a fence without cultivation. We cannot change the order of nature; we cannot get a grape ripe here by the first of August, but we can have them from the South at a very moderate price.

The Franconia is the best of the red raspberries. Mr. Wilder related the history of the introduction of this variety as follows: Two plants were sent to the late Samuel G. Perkins, by Vilmorin & Co., of Paris, forty or fifty years ago, and from these all the stock in this country and Europe has been derived. In the same way the Knevett's Giant was received by Mr. Wilder from Chandler & Co., of Vauxhall, England, and neither of these varieties is known in Europe, except as received from this country; Messrs. Vilmorin, knowing nothing further of the Franconia, nor Messrs. Chandler of the Knevett's Giant.

Although native grapes will survive the winter they are better for covering. The Lindley (Rogers's No. 9) has been grown in Canada; the Wilder (No. 4) can be grown for market, and the Pocklington promises to be adapted to cultivation for market. The Wilson strawberry is hardly fit to eat, unless we get it before we have anything else. It has been a question whether we shall ever get a variety to supplant it, but the speaker fully believed that we should produce an abundance of varieties of good quality, and equally adapted for market. It would be ridiculous to think otherwise.

J. W. Manning thought that the low price of strawberries discourages cultivators here. At Dighton, in this State, where large quantities are grown, they average only eight cents per quart to the grower. These do not come in competition with fruit grown further south than Connecticut. He thought people got satiated with small fruits before ours come into market. The Wachusett is one of the hardiest blackberries, but it wants high cultivation. Marshall Miles, of Concord, has a field which is very profitable. We want a better quality of peaches than we receive from the South; they are not equal to those grown here. Peaches can be grown profitably here; at Groton, peach growers are successful on high land, and G. & H. Whitaker, there, are successful, next to Dr. Fisher, with Concord grapes. The speaker had never seen larger or finer peaches in Missouri than he had seen grown in New Hampshire. At Mason, in that State, there is a fine orchard with a southeast aspect; others have a southerly aspect. At Goffstown, east of the Uncanoonuc mountains, peaches have not failed for twenty years, and the peach crop is considered the best on the farms. The late ones bring good prices for preserving; if any variety fails to ripen, it is the Crawford's Late. The land at Goffstown is a thousand feet higher than here. At Lyndeborough, in the same county, Charles Holt is successful with peaches, and formerly cultivated Catawba grapes successfully, but this variety has been displaced by the Concord.

Leander Wetherell remarked that peaches are grown successfully on the hills in Franklin county, Mass.

E. P. Richardson said that one point in favor of the raspberry is its value for canning, because it retains its peculiar flavor better than any other fruit. The Philadelphia is especially desirable for this purpose, on account of its fine color when canned. A grower

at Lawrence, cultivates this and the Wachusett blackberry largely, and his fields of the latter form a magnificent sight. He disposes of his surplus fruit by canning, and has found it profitable. Mr. Richardson thought the Dighton growers should ask a fair price for their fruit; they send it in as the season for Southern fruit is closing, and it sells at low prices, which establish the price of all the fruit grown here.

President Hayes said, that as a director of the Old Colony Railroad, he had been astonished at the wonderful quantity of strawberries grown in Dighton, and the extensive arrangements required by the railroad company to bring them to market.

Dr. E. L. Sturtevant thought that one of the duties of the friends of horticulture, is to educate the public to discriminate between the different varieties of fruit, and to give higher prices for the better qualities. If we can educate the people to appreciate the quality of the Triomphe de Gand strawberry, the growing of that variety might become profitable. The Society should make some effort in this direction. He had seen finer blackberries in the woods in Maine, than he had ever seen in cultivation. They always grew in the shade. He spoke of one field of wild blackberries, sheltered by alders, which was fenced in, and formed the most profitable part of the farm. His first appearance in print was when he sent a wild blackberry three and one-eighth inches long, to the editor of the Farmington Gazette. We can cultivate these varieties or produce new ones, but he was under the impression that all the kinds now cultivated in our gardens were no better than some to be found growing wild.

Mr. Wilder said that the finest wild blackberries are found in the borders of the forest. When the Improved High Bush blackberry, now known as the Dorchester, was exhibited before this Society, in 1841, by Eliphalet Thayer, of Dorchester, who cultivated it in his garden, he went the same afternoon with the late Cheever Newhall to see the fruit. Dr. Sturtevant's impression that the garden varieties were found growing wild, is correct, with regard to most varieties; but three kinds, the Orange, Warder, and Wilder, were raised in the West by a Mr. Orange, about twenty years ago. They were not of good color, and have not come into cultivation.

Mr. Curtis thought it was for the advantage of growers here to have Southern fruit in the market, as it produces a desire for our

own. Many of the berries grown here are no better than Southern ones. It does not take a provision dealer more than forty-eight hours to find out whether a particular mark means good or poor fruit; and, while the good is engaged two days in advance, the poor will remain piled up waiting for the hawkers. The taste of the people is being educated; there seems to have been a great improvement within a year or two, and a demand for the Sharpless and other large and fine berries. If the arrivals are largely Wilson, buyers will wait and see what comes by the next train.

Benjamin P. Ware thought the question before the meeting not difficult to answer. Southern small fruits go out before ours come in. He has occasion to use a good many, and he finds that when they are marked "native," he has to pay a considerable advance. People have become accustomed to having fruit, and when ours comes, they are ready to buy. The case is the same with peaches, except Hale's Early; the natives are higher. Southern grapes, also, are in the market long before ours come. Blackberries are got largely from the South, because we do not cultivate largely. The competition is not to our detriment, but to our advantage.

Josiah W. Talbot said there are two points from which to view this subject—as members of the community, and as growers of fruit. From the former point of view Mr. Wilder is correct in considering the Southern competition in small fruit an advantage. A neighbor of the speaker who formerly got twenty-seven cents per quart for his strawberries, now has to sell for sixteen, but he can raise them at a cost of eleven cents. He thought the price was reduced on the average twenty-five per cent. through the introduction of Southern berries. When the market is glutted the Dighton growers come in, and have to take Southern prices. The remedy is to make the quality of our fruit such that the South cannot compete successfully with it.

Mr. Strong said he believes the time is coming when we must reduce the price of fruits as well as of manufactures, so that all can have them. We are sending forced flowers South already, and if we go into the culture of small fruits on as large a scale as is done in the South, we can raise them as cheaply. The difference between eleven and sixteen cents is profit enough for Mr. Talbot's neighbor. We should not try how much money we can get out of the community, but the object of the Society should be to bring good fruit within the reach of all.

Mr. Manning said that the matter of labor is a very important one. Franklin Davis, at his nursery in Richmond, Va., pays his help partly in rations of Indian meal, molasses, and bacon; none receive above fifty cents per day and rations. At William Parry's extensive small fruit gardens, at Cinnaminson, N. J., the speaker had seen whole families living in barns and cooking out-doors, during the picking season. We cannot obtain labor at the prices paid in these cases.

Mr. Wetherell said that he should as soon think of talking about competition between strawberries here and in New Brunswick, as between those raised in the South and those grown here. He endorsed all that Mr. Curtis had said. Dighton berries in good order do not sell for the tail end of Southern prices. Mr. Wilder had struck the key-note in his remarks. The speaker mentioned a dealer who said he rejoiced in low prices, because they brought fruit within the reach of the poor. This discussion is in the direction of producing better fruit at low prices. In fruit growing, as in dairy farming, success depends on skill in business. The choicest butter will bring eighty cents per pound, and good fruits never go begging for remunerative prices. The South may grow the best fruit and send it here, and we shall be glad to buy it.

N. B. White said that Southern grapes come in competition with ours, because grapes can be kept. He thought Dr. Sturtevant's suggestion, to educate the taste of the community, a good one. The Society should give premiums for quality as well as size of fruit.

Mr. Hunt said that growers should not be discouraged by the low prices of last season. It should be remembered that the season was hot, and forced the strawberries to ripen early. The Philadelphia raspberry is the greatest bearer, but the fruit is not firm, and turns a little black.

Mr. Strong suggested that we should cultivate so well here as to turn the tables on the South.

President Hayes gave an account of some of his observations of Southern gardening a year ago. As the train approached Charleston, circulars were placed in the hands of the passengers, giving information concerning a garden at Magnolia, sixteen miles from the city. He was one of a party of thirty or forty who visited the garden, going up the river, passing the phosphate beds, the factories for grinding phosphates, and the alligators lying on the

banks. The garden was from forty to fifty acres in extent, and here, in the month of March, magnolias, azaleas, convolvuluses, and roses of exquisite varieties were in bloom in profusion. President Hayes was struck with the difference in the ease of cultivation here and at the South; the proprietor said that all he had to do to grow any of these flowers was to get a little slip and plant in the ground. The whole secret was the wonderful supply of manure. Before the discovery of the value of these phospates as fertilizers, they had been thrown into the river.

St. Mary's, Georgia, was once an aristocratic place, with fountains in the centres of the streets, but it is now deserted, and land in the vicinity has fallen from five hundred dollars to one dollar per acre. Here he met a gentleman who told him that his father, while at a dinner party, received news that a vessel had gone ashore with a cargo of pecan nuts, and though his friends told him he was too old ever to see any fruit from them, he got a quantity of the nuts and planted them along his garden; and now the trees from these seeds yield from four to five hundred dollars worth of nuts annually, forming his main support in his old age, and he has to watch that the nuts are not stolen. Here, also, President Hayes met Mr. Alexander Curtis, a graduate of Cambridge University, England, who was engaged in raising fruit and vegetables, but wanting a market, and Northern capital to enable him to erect a few small greenhouses.

In Florida the sandy ground presented a very unprepossessing appearance, and they saw very little foliage, and were much disappointed at not getting green peas and other early vegetables, but found the growers did not keep them for home use, but sent them all to the Northern cities. The only good beef came from Boston and New York. His wife said that another winter she would stay at home and have the tropics in her own house.

At Fernandina they expected to find bananas, but they all went to New York and Boston. On board the steamer, on their way to Savannah, there were over three hundred cases of cucumbers, and large quantities of cabbages, but not one was landed at Savannah; all went to New York, and they had none at their hotel in Savannah. At Baltimore they got some Southern fruit, and at New York plenty.

Mr. Wilder said that the result of the discussion today was exceedingly gratifying to him. We have settled that there is

really no competition between the South and North in small fruit growing worth speaking of. Dr. Sturtevant's remark that we should seek to educate the public taste is correct; it is what we have been trying to do for fifty years. The sixteen thousand bushels of strawberries brought from Norfolk to Boston, and the ten thousand bushels from Dighton, have enabled many to eat strawberries who never tasted one before. Mr. Strong is right in regard to reducing the price of fruit. This, also, is what we have been aiming at for years.

The President gave notice that, at the meeting on the next Saturday, the subject of discussion would be "Peach Culture," to be opened by Caleb Bates.

BUSINESS MEETING.

Saturday, February 12, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair. No business being brought before the meeting, it

Adjourned to Saturday, February 19.

MEETING FOR DISCUSSION.

The subject today was "Peach Culture," and the discussion was opened by Caleb Bates, who said that, in planting peach trees, the first thing is to see that they are not set too deep. He preferred to have the collar entirely above ground, but they are generally set three or four inches too deep. When the collar is below the ground, excrementitious matter forms on it to the great injury of the tree, and makes an excellent place of deposit for the eggs of the borers. If the collar is above the surface, this effete matter does not form, and the borers do not find a congenial home around the collar. He always pours in water while planting the tree, to settle the earth around the roots. It is very important to see that there are no borers in the trees when planted; he once bought a lot of trees which had been puddled, and when the puddle was washed off he found that half the trees had from one to five borers each.

He did not agree with those who think peach trees do best in sod land; they are likely to be not more than four inches in diameter after twelve or fifteen years' growth, and to have three or four dead limbs to one live one. He aims to make his trees grow in regular shape and produce abundantly. If all the fruit buds on a peach tree are killed, the tree has nothing to do but to grow, and care should be taken not to feed it too highly, But if the buds are not destroyed and the fruit sets, by the last of May it will be of the size of peas, and then the trees should be liberally manured with concentrated fertilizers, such as guano or hen droppings, and it is astonishing to see by the dark green color of the leaves how quickly the trees respond to such treatment. If no fertilizer is applied the tree will ripen the fruit, but make no wood or fruit buds for the next year. Mr. Bates emphasized this point as the most important thing he could say,—force when in fruit, and withhold fertilizers when not in fruit. The peach is the only one of our fruit trees that bears on the new wood. If all the crop is destroyed, or if the tree has grown too fast, the young wood may be shortened. Theoretically, a perfect peach tree is a cone covered with fruit. Mr. Bates here exhibited a branch of a tree which made a total growth last year of one hundred feet; it was originally planted in a very poor soil, but afterwards came within the limits of a hen-yard and showed the effect of stimulants.

Mr. Bates said in regard to borers, that while some pile up ashes or sand to keep them from the tree, he believes these are just what the borer likes; they retain just enough moisture to hatch the eggs. He would rather have a bowl around the tree than a hill. Others advise putting paper around the tree, but he has fifteen hundred trees, among which there are no two butts alike. There are ribs where the roots run up, and between these are openings where the borers can enter. He advised to use a mason's trowel, and a six-inch butcher's knife, to scrape away and cut out the borers. A mat should be provided to kneel on. The first season the borer does not enter the wood, but remains in a cavity outside, where it can easily be scraped off. He keeps hens for the benefit of his peach trees, and feeds them in the afternoon with cracked corn, throwing a handful around each tree. Peach trees seem to be exceedingly sensitive in regard to having anything growing among them, and Mr. Bates advised that no crop whatever should be planted, but that the ground should be left entirely bare.

The "yellows" in the peach is a very difficult subject. It destroys the trees from Plymouth bay to the bay of San Francisco. John Rutter, the author of a book on the culture and diseases of the peach, is of the opinion that it is caused by a lack of potash in the soil. This view is supported by the fact that some of the best trees the speaker had known, grew where the rubbish from repairing a house was deposited. The effect of lime on vegetable matter is to produce potash. He did not see how we can put a stop to this disease, with infected trees all around us, and nurserymen sending out diseased trees. He got his trees from a nursery at Newbury, where he found a healthy stock. He has known the yellows to affect trees a quarter of a mile away from any diseased tree. People are very unwilling to remove an infected tree. A diseased tree dies very quickly, if young, but if old it lasts a good while. The disease will run through a row of trees, and poison them, before the effect is shown outwardly. It needs a bold hand to take the tree up immediately. It should not be allowed to ripen fruit. Plenty of lime and potash should be used, if the soil is exhausted of these.

Mr. Bates said that his location gives him peculiar advantages for learning the ability of different varieties to resist frosts of varying severity. This can not be ascertained by any scientific test, but only by observation. Among thirty-two varieties, the Ives's Blood and Hale's Early appear as tough as the oak. The Coolidge's Favorite, E. S. Williams, and Salway come next. Among all the rest there is not much difference until we come to Crawford's Early, Crawford's Late, and Snow, which are very tender. In 1879, a frost on the 24th of May rose up like a tide; but the Hale's Early gave a handsome crop, while the Coolidge's Favorite were killed higher up, and the Crawford's Early clear to the top. If he had foreseen it, he could have saved his crop by making a smoke on the windward side of the orchard. He has saved sweet potatoes in that way, and in one case saved his garden from the frost when the smoke rose up in a column, the draft bringing in the warm air from the forest.

In regard to quality, the Rogers's Seedling, a yellow fleshed variety, is one of the finest; it is of spirited flavor, resembling Crawford's Early. The Downer, another yellow fleshed variety, is excellent. Of white fleshed varieties, the E. S. Williams and Mountain Rose are fine; the Grosse Mignonne is good but smaller.

The Stump the World is later and excellent. The Snow is excellent, but tender. The Salway is too late for general cultivation in this climate, but good in warm locations and desirable in collections. It holds on to the tree well. Hale's Early is the most profitable because most certain. It should not be allowed to overbear. Mr. Bates has had them eleven and a half inches in circumference.

His soil is a sandy loam, the sandy constituent being sharp and gritty. Such land produces the finest peaches and sweet potatoes. He would not advise to plant on soils entirely of sand. The best locations are on plateaus and hills ; such places in Massachusetts are the safest for peaches north of Florida. Elevation has a wonderful effect. His house is on ground thirty or forty feet higher than his orchard, and the peach buds are safe there when they are all killed in the valley. The peach crop is much more liable to be destroyed by late frosts in the South than here. He does not believe there is any place equal to Eastern Massachusetts for the production of peaches of high color and high flavor, though the western part of the state is not bad. The shores of Maine and New Brunswick form a coast line against which the northeast winds raise a spray, and force a saline atmosphere across our State, while the whole length of the State projects beyond all the coast south of New York City. This results in the south and southeast winds bringing salt enough to blur our windows, as can be found by a touch of the tongue. This saline influence heightens flavor and color in all our fruits. He had had Catawba grapes covered with a bloom of salt where they were exposed to a concentrated draft of air.

The President here introduced to the meeting, John B. Russell, now of Newmarket, N. J., and the only survivor of the eight corporators of the Society, who thanked the President for the kind words in which he had introduced him, and expressed the pleasure which he felt in once more attending a meeting of the Society.

The President remarked that among the horticulturists present were many whose gray heads indicated their long experience in gardening, and he called on Hon. Marshall P. Wilder to speak of peach growing.

Mr. Wilder said that it is never too late to plant fruit trees, and that most of the gray-headed members present would live to eat the fruit of peach trees if they should plant them the coming spring.

He spoke of a gentleman who, at the age of ninety-two set out peach trees, the fruit of which he lived to eat. He agreed with Mr. Bates's view that we can raise peaches in Massachusetts which will compare with any in the world. If we select good kinds, and plant a few trees every year, we shall always have peaches. Before planting a tree he examines it carefully to see that it is free from borers, and ties around the base a piece of paper six inches wide—half above and half below ground. This will protect the tree from borers for one year and sometimes more. It is important to select the most useful sorts—he thought the Hale's Early, Early York (serrate), Crawford's Early, Oldmixon Free, and Crawford's Late, the five most valuable kinds. A few years ago the Hale's Early was the earliest kind, but the very early kinds which have been introduced within a few years have lengthened the season four weeks, and the later varieties which have been introduced to cultivation at the South, have prolonged it two weeks more. He advised to plant the stones of the best kinds, as seedling trees are the healthiest and longest lived. He intends to advise the saving of seeds and the crossing of varieties as long as he lives. If previous generations had done this we should have many more fine varieties of fruit than we have now. The crops of peaches in this country are wonderful; last year there were four million baskets from the Delaware peninsula alone —more than ever were raised in the famous gardens of Montreuil.

Mr. Wilder congratulated the Society on the presence of Mr. Russell, to whom, more than to any one else, the formation of the Society is due. In 1829 Mr. Russell kept a seed store in North Market street, where John Lowell, Elijah Vose, and other lovers of horticulture frequently met, to whom Mr. Russell suggested the formation of a horticultural society; and when it was decided to form one, he was the most active agent in carrying out the plan, and after it was formed he watched over its growth.

Mr. Bates admitted that it is not as much labor to apply paper as to scrape off the borers, but thought it was not as effectual. In answer to an inquiry, he expressed the belief that there is no particular temperature at which peach buds are certainly killed. They may be killed at zero or they may stand twenty degrees below. Much depends on the condition of the bud when frozen, and more on the manner in which it is thawed out.

George Webb, of Elizabeth, N. J., said that in Delaware the borers are scraped off, but nothing is ever put round the trees.

Charles M. Hovey said that he had had some experience in cultivating the peach since he was a young man. In 1806 Richard Peters read a paper before the Philadelphia Society for Promoting Agriculture, of which he was president, on peach culture, in which he detailed the difficulties that he had encountered, and the means he had taken to overcome them. Judge Peters and other writers complained that these difficulties were increasing, and that the climate was less favorable than previously; and every year since then people have made the same complaint, and said that it was no longer of any use to attempt to cultivate peaches. They recollect the abundant crops in former years, when they were young, but not the failures. The speaker thought we might count on a crop three years out of five, if we have the trees. He used to raise ten thousand peach trees in his nursery every year, and had a patch in the rear of his house, twenty-five years ago, which were left unbudded, and produced many fine varieties, three of which were thought worthy of names, and were called the Cambridge Belle, White Ball, and Hovey. About 1848 he made a collection of eighty varieties of peach trees, which grew up and fruited so full that the trees broke down. All the characteristics of the varieties were noted. He saw no reason why peaches should not be cultivated throughout New England.

The late A. J. Downing was of the opinion that the peach crop was destroyed whenever the thermometer fell to ten degrees below zero, but this has been found incorrect. But, if after severe cold there comes a thaw, and then the mercury falls to zero again, they are destroyed. The case is the same with nearly all plants; they will stand one frost, but the second freezing kills. In low grounds peach trees are more liable to be injured than on elevated land. Some persons say there is no growth in trees in the winter, but if we compare the condition of the buds of the abele on the first of November with that on the first of January, we shall find they are swollen, and if we examine them now we shall find them still more swollen. If peach trees get only moisture enough to keep them from drying up, they are more likely to stand the winter than if kept too moist. The trees must be pruned, if it is desired to keep them down. Mr. Hovey preferred to plant anew frequently, and spoke of a gentleman in Dorchester who plants six trees every year. He thought the best varieties for amateurs are Hale's Early, Early York, Coolidge's Favorite, George the Fourth, Crawford's

Early, and Crawford's Late. Peach trees in France are subject to mildew.

Benjamin G. Smith said that the buds on his peach trees, which are on the highest land in Cambridge, were uninjured. The thermometer had fallen to seven degrees below zero. The total failures have been exceptions to the general rule. He had had six or seven crops in the last ten years.

Joshua Coolidge, a grandson of the originator of the Coolidge's Favorite, said that since his boyhood peaches had been a failure, owing to the borers and yellows. When he was a boy, peaches were as common and required as little care as the coarsest weeds. Young seedlings sprang up in the orchard, and the fruit required thinning. He now cultivates only for family use.

John B. Moore was glad to hear such hopeful views expressed in regard to peach culture. A few years ago he was taken to task for expressing such views. He felt no doubt that we should raise peaches as well as ever we did. He has a good peach orchard, and if the buds are not killed, will have a crop. The location is the first thing to be considered; it never should be in a valley, but on hills or high table land. Soil that will produce forty bushels of corn to the acre is rich enough for peaches. It is a great mistake to force trees the first year or two; a moderate growth is all that is wanted. A good strong tree, one year from the bud and two from the seed, is better to plant than an older one. The main stem should be headed down to five feet, and the side branches should be cut off entirely; they will die if they are not cut off. If the trees are headed down to five feet, and the fruit is thinned, the trees will not need to be propped. The branches will start out horizontally, instead of growing upright and making sharp crotches. In shortening the previous year's growth, in later prunings, it should always be cut to an outside bud. When the trees are large, only the strong leading branches should be shortened; the lateral shoots bear the fruit. In five years the lower branches will bend to the ground without breaking. If the tree is cut down to two feet when planted, the branches will run up, and split down if not propped, and sometimes if they are. It costs a good deal to prop them. The speaker had planted peach trees from ten to twenty-five feet apart, but thought twenty feet best. This gives plenty of air and light, without which the fruit cannot color well. The soil should receive clean culture,

and no crop should be grown. He does not pity any man who loses trees by borers. He used to have a great many, but now he scrapes away the earth and puts on whale oil soap in the spring, and again the first of July. It is easy to cut them out. Nature expects the collar to be covered. The only serious trouble is the yellows, which has never been accounted for, nor has any remedy been discovered. The speaker thought it was caused by a fungus. Professor Goessmann claims to have cured the yellows, and Mr. Moore had been using the material which the Professor had applied, which may have prevented the development of the yellows. Ashes and bone as fertilizers will give the highest colored fruit.

In regard to varieties for market, the Crawford's Early is early enough, as it comes in just as the best Southern peaches are gone. Crawford's Late gets frosted once in four or five years. The speaker grows Coolidge's Favorite only for his own eating. The Oldmixon Freestone is good, but there is more money in the Crawfords. In pruning we must not be afraid to cut off strong wood pretty severely; sometimes shoots as large as a man's thumb must be taken off. In an orchard, which must be cultivated by horse power, the trees cannot be allowed to branch as low as in the garden. His land is a gravelly loam, about seventy-five feet above the valley. He is not particular as to aspect.

Mr. Wilder wished to commend Mr. Moore's general system of pruning, but he preferred to cut down a young tree to eighteen inches when planting. In the autumn it will be five feet high.

Rev. F. L. Capen had always been interested in peach culture. He believes in severe pruning for peach trees; they need as much pruning as grape vines. He would prune during the winter and then in spring you have a small top and whole root, and all the buds come out strong, and give large, handsome fruit. He thinks the yellows is due to the absence from the soil of some kind of food which the tree needs. The speaker had cultivated oranges in Florida, and said that neither the peach nor the orange would succeed with any crop growing around it. He advised those present to go South and raise oranges and fresh figs.

James P. King said that he planted a hundred peach trees eight years ago, and four years ago raised a great deal of fruit. He thought they should bear the third year. He could have told when he looked at the thermometer, when the buds were killed. They are not killed so much in winter as in the spring. He mulched

with spent tan — about three bushels to a tree — which by keeping the frost in the ground retarded the swelling of the buds, and prevented injury to the crop by late frosts. A neighbor (in Peabody) who pursued the same course, sold in two years, from half an acre of land, $790 worth of fruit of finer quality than the Southern. His trees are planted eight or ten feet apart. The buds are all right for a good crop this year. The Crawford's Early and Foster are the principal varieties; the Foster is very handsome, but the Early Alexander is ahead of all others as an early fruit. The New York nurserymen say it is a clingstone, and they do not think much of it; but it comes into market nearly as early as the Southern peaches, which are not to be compared with it. He thought these and the Oldmixon Freestone the four best varieties. The speaker advised all peach growers to try mulching with tan. He would pile it around the trees without removing the soil, and after it has served the purpose of retarding the buds, would remove it lest it should furnish a harbor for injurious insects. He had one tree affected with yellows, which looked as if it was caused by starvation. He took the tree away, but it appeared to have affected another tree near by, as seedling onions are injured by a bed of rareripes alongside. Trees affected with yellows should be immediately removed, as the disease is liable to affect any trees in the orchard. Those nearest are most in danger of injury. Even if the trees have fruit on them when the disease is discovered, they should be removed, the value of the fruit being of no consideration in comparison with the injury to the trees around. In planting he marks the ground with a large breaking up plough, taking care not to disturb the subsoil; this makes it easy to set out the trees. At the time of planting he takes off every branch and shortens the stem, leaving from two and a half to three and a half feet. If the top does not leave out he trims it down to the highest shoot. If the thermometer falls to twenty degrees after the buds are nearly ready to bloom, they would be sure to be killed, and it is to prevent this that he mulches with tan. If the ends of the shoots are injured by frost, they should be trimmed back to the live part.

The President announced that the subject for discussion the next Saturday would be "Plum Culture," with, perhaps, a continuation of Peach Culture.

BUSINESS MEETING.

SATURDAY, February 19, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair. No business being brought before the meeting it

Adjourned to Saturday, February 26.

MEETING FOR DISCUSSION.

The subject of Peach Culture was first taken up, and Caleb Bates referred to some criticisms on his recommendation to set trees with the collar at the surface of the ground. It had been objected that the borers would get into the roots, but he said it was as easy to find and destroy them in the roots as in the trunk. Nature always puts the collar upon the surface, as in forest trees which spring up from seed. Mr. Bates here showed two sketches; the first of the base of a pine tree growing naturally, and the second of the base of an apple tree; the latter was eleven inches in diameter, but would, he said, have been much larger if not planted too deep. The first is the plan of nature; the second is art. The tree does not lift in growing; the reason that trees planted as recommended appear to have their roots above ground, is that the roots increase in size. When trees are planted in soil which is made loose and mellow some distance below the roots, they should be set two inches above the surface to allow for settling. When a boy he planted some apple trees too deep, and they did not grow for five years; he then dug them up and planted them properly, and now they are thriving and productive trees.

George Hill said that he lives on what was a peach farm sixty years ago. The yellows is the greatest trouble in raising peaches. It appeared on his farm about 1848. This was the second instance in Massachusetts; the first was on the Coolidge farm in Watertown two or three years earlier. Since that time the trees in this State have never been free from it. Mr. Hill's trees bore well for three years after they were attacked. He thinks it is deep seated. Old trees, isolated in grass land, escaped the disease and died of old age, but when diseased trees were set out near them, they took

the disease. It appears about the fifth or sixth year from the seed. A nursery raised from the seed of peaches brought to our markets from the South will be sure to show the disease, and nurserymen are now collecting their peach stones from healthy trees in Missouri and the mountains of Virginia. Trees from such seed should be budded from the healthiest trees that can be found, and will then endure for five or six years. Mr. Hill said that as a member of a Committee of the Middlesex Agricultural Society he visited two peach orchards offered for premium; one of these, containing two thousand trees, was in Hudson, and the owner had also a nursery of four thousand trees. Mr. Hill saw symptoms of yellows there. The seed was got from New York. Any person planting a peach orchard must take new land, be very particular in selecting his seed and manure, and watch carefully every step, to avoid contagion. There still remain old, isolated trees which are free from yellows. The speaker saw some on Cape Cod, from twenty to fifty years old, which looked like the trees he used to see, before the yellows was known, and at Mashpee he saw a healthy tree thirty years old. Such trees as these will furnish healthy seed. The whole difficulty in raising peaches is the yellows; when this disease prevails new plantations must be made almost as often as of strawberries. Half of Mr. Hill's trees have begun to show yellows. The soil, aspect, elevation, and method of planting are of comparatively little consequence. He found the border of Spy pond, and a hill two hundred feet above, equally eligible. Old native trees gum more than trees from New Jersey. If you get healthy seed and raise healthy trees, it is very difficult to keep them so; pruning a healthy tree with a knife that has been used to prune a diseased tree will communicate the disease. When planting he would prune off all bruised roots, and prune the top to a straight stick, but not prune at all afterwards. His last orchard of two hundred trees of Crawford's Late was never pruned. He thought seedlings from healthy trees would be longer lived than budded trees. It is of no use to set a healthy tree in the place from which a diseased tree has been removed.

David B. Flint said that he had cultivated peach trees successfully on ground from one hundred and twenty to one hundred and fifty feet above tide water. He had covered the trunks of his trees with straw to protect them from the sun, as he saw done at Montreuil, where the trees are trained on walls, and thought it

beneficial. The straw is removed about the middle of May. Buds of the Foster peach inserted on the north side of seedling stocks came through the winter safely, when those on the south side were killed.

J. W. Manning said that he got buds of the Foster peach, and budded two thousand trees at Billerica, which showed the yellows in three years. He thought that peach trees planted deep would form new roots near the surface, and that plums and elms would do the same.

Benjamin G. Smith showed peach buds taken from several trees in his garden at Cambridge, none of which were injured. Hon. Marshall P. Wilder's, at Dorchester, and Mr. Flint's, at Watertown, were uninjured, while those of Edmund Hersey, at Hingham, and Mr. Bates, at Kingston, were killed.

Mr. Bates said that the buds of trees at his house, where the trees are not healthy, were uninjured, while those at his orchard, thirty feet lower, where the trees are healthy, were destroyed.

Aaron D. Capen spoke of raising peach trees forty years ago, from stones which he got at a garden in Roxbury, where the trees were all seedlings, all healthy, and all produced fine fruit. The progeny of these trees all produced fine fruit. He bought some Long Island trees, which proved to have the yellows, and communicated it to all these seedlings, and they were all destroyed. The disease will go through acres of orchard, and the only way to banish it is to destroy all diseased trees. Most of the seed from which nursery trees are raised, has been collected promiscuously, and there are two chances for them to take the yellows — from the seed and from the bud. Handsome dishes of peaches have been shown here, of some of which the Committee said at once, "These are from a diseased tree, and buds will propagate the disease." On the hills in Connecticut are found what are called "sheep peaches;" the trees are twenty-five years old, and healthy. It would be well to select pits from such trees as these to produce healthy stocks in the nursery.

Hon. Marshall P. Wilder, said it was learned long ago that diseased peach trees must be extirpated. He agreed with Mr. Hill's condemnation of stones gathered promiscuously; some of them must be diseased. If we plant the stones from our trees which are perfectly healthy, we shall get good kinds, and he

advised to grow them up without budding, believing that they will last longer.

John Owen quoted from Thacher's "American Orchardist," (page 207), a case where a tree supposed to be dead from the effects of the yellows, had large quantities of common wood ashes thrown about the roots during the winter. The next season it put forth its leaves vigorously, and bore an abundance of fine fruit. A small quantity of ashes was thrown around the roots the next fall, and the next season the tree bore so full that it was necessary to prop it up. Another gentleman tried the same experiment with entire success. The speaker asked why this cure was not continued. He raised one year fifty bushels of peaches. The Noblesse is the best of all — it is wonderfully delicious; it is of the color of a Green Gage plum and equal to it in quality, but the tree is tender. The George the Fourth is more solid than Coolidge's Favorite, and superior in quality. He had trees of Crawford's Late planted near a marsh, which never failed to ripen their fruit.

Mr. Wilder doubted whether we should find any remedy for the yellows, though experiments are under way at the Massachusetts Agricultural College, and in the experimental grounds of the "Rural New Yorker," in the hope of discovering a remedy. Professor Goessmann applied a chemical manure to a row of affected trees, which restored them for one year.

C. M. Atkinson said that some of Mr. Bates's points were new to him, and some he could confirm from his own experience. There was, however, one point which he had overlooked — the influence of the stock and of root pruning in retarding growth. He would have his peaches on the Muscle plum stock. But the plum is not so successful on the peach stock; five years ago he planted five plum trees, one of which sent up peach suckers, and last summer, when trees had nearly completed their growth, there came a heavy rain after dry weather, and this tree burst in fifteen or twenty places, and gum exuded. Peach stocks are, however, much cheaper than plum stocks, and plums budded on them will make marketable trees sooner, and hence there is a great temptation to nurserymen to propagate them in this way. The principle works two ways; the plum cannot take all the sap furnished by the peach stock and bursts, while the peach on the plum finishes its growth and ripens its wood earlier. In England, peaches are cultivated entirely on the plum stock. At the late John P. Cushing's place (now Samuel

R. Payson's), the speaker found peaches on plum stocks, planted by David Haggerston, and if he were planting one or a thousand, he would have them on plum stocks. He thought it would ward off the yellows.

Charles M. Hovey, asked whether peaches under glass are ever affected by the yellows. He had never seen this disease in the extensive peach houses of Samuel G. Perkins or Thomas H. Perkins, and it does not prevail in Europe, if it is known there at all. He thought we should have to look sharp to find any fungus connected with it, but it might be caused by climate. In 1857, there were more pear trees than peach trees killed; in 1861, the thermometer fell to twenty degrees below zero, falling sixty degrees in twelve hours, and the peaches and cherries did not get over it for years. In 1854 or 1855, there were so many peaches that he could not sell them in the market. He had had little trouble from the yellows. Peach trees grow so quickly that it is hardly worth while to doctor them. If he wanted to grow them for market he would plant ten acres, and when they failed, cut them down and plant ten acres more. He would plant on high sandy land. They cannot be grown so cheap on plum stocks as on peach; the great value of the peach stock is its quick growth and cheapness.

Mr. Atkinson confirmed Mr. Hovey's view that the yellows is unknown in England, or under glass in this country.

The subject of "Plum Culture" was here taken up.

Mr. Wilder said that formerly we raised the plum very successfully; the only troubles were the curculio and the black knot, and now from these 'causes they have almost gone out of cultivation. Samuel Pond and Henry Vandine grew them at Cambridgeport, almost as freely as currants. The curculio can be destroyed by jarring it down on a sheet placed underneath. The black knot should be cut out as soon as it appears. For a few years past, plums appear to have succeeded better than previously. He has only two plum trees left; one a Monroe, twenty-five feet high, which has some black knots that he cuts out, and another on the Canada stock, which it overgrows, producing an unsightly appearance. There are never any black knots on the latter. He hopes we are going to cultivate plums more successfully than a few years ago, and means to make a new plantation.

Mr. Wilder quoted from a report by Dr. T. W. Harris, in the "Proceedings of the American Pomological Society," for 1854, the opinion that the black knot is not caused either by the insects found in them, or by the black fungus, *Sphæria morbosa*, on the outside. He who will not protect his plum trees from the curculio, does not deserve to have plums, any more than he who will not protect his trees from canker worms, deserves to have apples. Ellwanger & Barry, of Rochester, N. Y., raise plums by cartloads; a man attends to half an acre of plums exclusively for two months. He spreads cloths under them morning and evening, and a sudden blow on the tree with a mallet jars the curculios down on the cloths, when they are gathered up and destroyed.

Rev. A. B. Muzzey said that he was a neighbor of the late Samuel Pond, and that Mr. Pond had most remarkable plums—Washington, Jefferson, Green Gage, etc., which always commanded the highest price—some of them two dollars per dozen. This was from 1835 to 1845 or later. Mr. Pond's land had been at times overflowed by the tide, and the speaker thought his success was due in part to the saline matter in the soil. In the latter part of his life he was somewhat troubled by the black knot. Mr. Muzzey said he had destroyed the curculio by jarring it down upon sheets.

Mr. Hovey said that he was born in Cambridge, and lived about a hundred feet from Mr. Pond, who was a blacksmith. At that time Mr. Pond had no garden. The estate where the speaker lived was purchased by his father in 1799, and the spring tides were kept out of the garden by a dike which was overflowed every fifteen or twenty years, though he could recollect only one overflow. His father had plum trees producing white and blue plums, the fruit of which then brought four or five dollars per bushel. One of his earliest recollections was of climbing one of these trees and picking three bushels of fruit from it. At first there were no curculios, but afterwards the fruit began to drop; the next year it dropped more, and then the black knots appeared and he suggested cutting down the trees. In 1831 or 1832 a very high tide covered the garden six inches in depth, and killed the strawberries. When the sun came out everything was covered with salt. Mr. Pond began his garden after this, but the soil was no more salt marsh than Mr. Hovey's, and salt had nothing to do with Mr. Pond's success in raising plums, but it was rather due to his manuring very highly. Mr. Pond's trees finally suc-

cumbed to the curculio. In 1827, before the curculio appeared, Mr. Hovey received from Prince's nursery the Washington and Imperial Gage plums. He once bought a thousand Canada plum stocks, but found they were more subject to black knots than the ordinary stocks.

Mr. Bates said that his trees were struck with black knots all at once. He planted Green Gage and Lombard plums, and when he discovered curculios in his trees he tried every expedient to save the fruit by frightening them away or other means. He thought that when people apply remedies the curculio is often frightened away by the frequent examinations made as to the effect of the remedy. He placed stakes around a Green Gage tree and fastened a single breadth of mosquito netting to them, and the tree fruited nicely. Before that time his children had hardly seen a plum. Last year his wife pinned a breadth of mosquito netting around the tree and it fruited well again.

Mr. Owen said that he had cultivated a great variety of plums, and had the curculio more or less, but no knots; afterwards the knots set in violently. He cut them out and washed with salt, and concluded that it was a remedy, and wrote a paper on the subject for one of the agricultural meetings at the State House, but afterwards the salt did no good; the knots grew worse and worse, until the trees were destroyed. He thought the knots due to the soil; naturalists say that the fungus grows on the knot. Professor Cleveland, of Bowdoin College, saved his plum crop by removing the earth under the branches to the depth of three or four inches and covering with air-slacked lime. He tried it on one tree, and had no curculios about it, and it bore three bushels of fruit. The Jefferson and Reine Claude de Bavay are two of the best varieties.

Mr. Smith had used whale oil soap in the proportion of five pounds to a gallon of water, for showering his plum trees and shrubs, and had great faith in it as a destroyer of insects.

Mr. Bates said that plums could be protected from the curculio by sprinkling the fruit when damp with air-slacked lime, so thickly as to cover it, and it will not injure the fruit. Some cultivators think a clay soil necessary for plum trees, but he thought some varieties would succeed in a light soil.

Mr. Flint said he had trees of Coe's Golden Drop and other plums, bearing well in a sandy soil; four or five feet down there is blue clay. He has put a peck of wood ashes around each tree and dug it in.

J. W. Manning had seen plums in numerous instances thriving in sandy loam. In his native town of Bedford, New Hampshire, the soil is a rocky yellow loam without clay, but thirty years or more since, twenty-five of the finest varieties were cultivated there, and all bore abundantly until the curculio appeared, which was about 1855. In Chelmsford, the curculio destroyed the plums about 1849 or 1850, so that their cultivation was practically abandoned. In Chelsea, two years ago, he saw Lombard plums from a rocky, gravelly loam, though there might be clay underneath. They were under good cultivation, and the hens picked up the insects under them.

Robert Manning said that the researches of Professor Farlow* had proved conclusively that the black knot is caused by a fungus (*Sphœria morbosa*).

It was announced that the subject for discussion the next week would be, "Which of the new or more recently introduced Hardy Ornamental Trees and Shrubs are worthy of special mention?"

BUSINESS MEETING.

SATURDAY, February 26, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes in the chair.

The Treasurer stated that it would be necessary to provide a new plate for the Certificates of Merit awarded by the Society. The subject was referred to the Executive Committee with full powers.

Adjourned to Saturday, May 5.

MEETING FOR DISCUSSION.

The President, in behalf of the Committee on Discussions, respectfully requested that exhibitors of fruit, flowers, or vegetables would have their contributions arranged by 11 o'clock, so as not to interrupt the meetings for discussion.

---

* Bulletin of the Bussey Institution, Vol. I, p. 440.

The subject assigned for today was, "Which of the new or more recently introduced Hardy Ornamental Trees, Shrubs, or Plants are worthy of special mention?"

Several members having been called on to name such plants, and having answered that they were unprepared, Hon. Marshall P. Wilder said that he would name one shrub which he considered the most desirable of all—the *Hydrangea paniculata grandiflora*. Though introduced here a quarter of a century ago, its merits have not been recognized until within a few years.

William C. Strong thought it the most showy but not the most beautiful of shrubs. He considered the *Hydrangea paniculata* in some respects preferable to the variety *grandiflora*. The latter is more heavy and coarser than the type, which is of more upright growth, more graceful, and quite as hardy. The *Viburnum plicatum* (which is allied to the snowball) is much more delicate. It is not so common as the *Hydrangea paniculata grandiflora*, for it is more difficult to propagate and does not grow so rapidly.

Mr. Wilder thought the *Viburnum* very beautiful, but not more so than the *Hydrangea*. Many of the plants which we think new have been known a good while but have not become common. This is the case with the *Viburnum plicatum* as well as the *Hydrangea paniculata grandiflora*. The former was figured in the "Flore des Serres" more than thirty years ago. Sometimes varieties of grapes and other fruits as well as flowers are dropped from cultivation, and afterwards come up again and are thought new.

Mr. Strong thought the *Viburnum plicatum* was not introduced into this country thirty years ago, and was not like the *Exochorda grandiflora* which was comparatively rare and has now come up again.

Charles M. Hovey said that he had the *Viburnum plicatum* thirty years ago. He saw it at Mr. Buchanan's grounds at Astoria, Long Island, eighteen years ago. He thought the variety *grandiflora* of *Hydrangea paniculata* did not differ from the type. The subject was discussed in the "Gardeners' Chronicle." The *Hydrangea paniculata* represents all that is grandest in shrubs as the *Exochorda* represent all that is most beautiful. He agreed with Mr. Strong that the *Viburnum* is more beautiful than the *Hydrangea*, but thought the *Exochorda* still more beautiful, and also more difficult to propagate. These three are the most beautiful of the more

recently introduced shrubs. The *Viburnum macrocephalum* resembles *V. plicatum;* the cluster of flowers is larger.

President Hayes agreed with Mr. Wilder (whom he styled the Nestor of the Society) that the *Hydrangea paniculata grandiflora* is superb. He cultivates it in many forms, — large groups, and trained to a single stem. He had taken great pleasure in the exquisite foliage of the Japanese maples,—some of rich scarlet before that of others has appeared. The *Aralia* (*Dimorphanthus*) *Mandshurica*, is a new tree-like shrub with immense clusters of creamy white flowers. The *Polygonum Japonicum* is a new climbing plant with large variegated leaves, which are very ornamental. It grows with great rapidity, propagates easily, and is perfectly hardy, having stood four winters. The *Xanthoceras sorbifolia* is a new and very charming shrub. The last three plants, which were introduced here by the speaker, are yet quite rare. The *Sciadopitys verticillata* or umbrella pine, which some have thought was not hardy, Mr. Hayes had found quite hardy, several plants which were left out during the winter having done better than those sheltered.

Mr. Strong inquired of the President whether he gave special care to shading and watering the Japanese maples. In his observation they had suffered from the hot sun, like the variegated *Negundo*. Of this he saw a specimen at Mr. Hunnewell's as fine as any that he saw in France, but it does not look as well now.

President Hayes replied that his Japanese maples were planted in the shade of pear trees, and had no special watering. In winter he puts a little matting around them. His finest variegated *Negundo* is on a sidehill, and has no protection; in severely hot summer days it burns a little, but on the whole is most satisfactory. Others which stand in bleak places have a little protection, but this will soon be discontinued.

Mr. Strong thought that the President's fine *Negundo* would ultimately fail like the others. Our clear sky and hot sun are too much for its delicate foliage. The plain type is hardy in suitable soils. He thought the Japanese maples would also suffer; under protection they may do, but as a general rule they will disappoint. The *Acer Schweidleri* is very promising; it is a tree of the Norway maple type, of first size, hardy, with foliage of a beautiful pink changing to dark green.

President Hayes agreed with Mr. Strong in regard to *Acer*

Schweidleri. He had had the variegated *Negundo* for eight years, and though he lost most of the first, those which he has now promise to stand. We cannot expect to have everything perfect; we must take some trouble with choice and delicate plants, and it is little to put a mat round a small maple.

Mr. Wilder said he tried the Japanese maples when they were first introduced, and lost every one; he found them very feeble. Mr. Hunnewell's experience has been the same with very few exceptions. The speaker admired the enterprise of President Hayes, but did not think the Japanese maples would ever come into common use. In his observation the variegated *Negundo* had generally failed under our hot sun, and a large tree which he saw in the Parc Monceau, at Paris, has since wilted and withered. He had seen none looking really well except at Mr. Hayes's and Mr. Hunnewell's. He hoped the President would persevere and be successful in getting up the Japanese maples. With some plants the case is exactly opposite that of the Japanese maples; perfectly hardy things are introduced, but not known to be hardy, and are therefore kept in the greenhouse, where they die out. Forty years ago he paid three guineas for a plant of *Andromeda floribunda*, which he kept in the greenhouse, and William E. Carter came over from the Botanic Garden at Cambridge to help nurse it; the price afterwards came down to seven shillings and sixpence, and is now only one and sixpence, and the plant is known to be as hardy as a currant bush.

William Gray, Jr., said that he had made a specialty of the new evergreens, and had found all the *Retinosporas* perfectly hardy. There are many new spruces of medium size—not as large as the Norway and of better habit; they do not get straggling. The *Nordmanniana*, *Menziesii*, and *orientalis* are all very beautiful; the last is the best. Mr. Gray's largest specimen is fifteen feet high. The blue spruces, of which there is a great variety—among them the *Abies Menziesii*, now know as *Picea pungens*—are next in beauty. The Japanese evergreens are all hardy, and are adapted to small places. Mr. Gray's plants were received directly from Japan.

Mr. Strong remarked that *Retinospora squarrosa Veitchii* has the reputation of being more glaucous than the type.

Mr. Hovey was glad to hear Mr. Gray speak so highly of *Abies orientalis*. It is the most refined of all the spruces; *A. Nordmanniana* is more grand, but *A. orientalis* is superior in delicacy.

It is a slow grower, and not so easily transplanted as some species. It is difficult to raise from seed and therefore scarce.

Mr. Hovey quoted from the "Magazine of Horticulture," for 1866 (page 330), his recommendation of the *Viburnum plicatum* as a species that should have a place in every collection of handsome flowering shrubs. He imported from Lemoine, in 1878, a plant of *Xanthoceras sorbifolia*, for which he paid five francs, and also at the same time the Kentucky coffee tree with variegated leaves. The type of the latter (*Gymnocladus Canadensis*) is one of the most remarkable and beautiful trees in winter and summer. In winter its blunt shoots, without spray, are unique, and in summer its twice-pinnated leaves, three feet long, are delicate yet massive. In 1878 the speaker planted seed in a box; in the centre there came up a plant with variegated foliage. Wier's cut-leaved maple is one of the best recent acquisitions. The liquidambar is somewhat tender here; it gets killed back in winter, but gains a foot or more every year. In Connecticut it is entirely uninjured. The star-shaped leaves are very peculiar, and change to a beautiful deep crimson in autumn. The tupelo has foliage as beautiful in summer as that of a camellia, changing in autumn to an intense crimson; no other tree takes so deep a color. The limbs spread horizontally. There is in Cambridge a very fine old tree, from which the speaker has raised seedlings, and a second generation from those. The *Acer Colchicum* is almost as deep colored as the Japanese maples, but had not proved hardy with him; it was killed in the winter of 1861–2. He thought one variegated *Negundo* enough on a place, unless it was desired to have it spotted all over with white, and moreover the foliage is apt to burn. He had a plant of *Sciadopitys verticillata* very early, and had found it perfectly hardy, but a very slow grower, not making more than six inches of wood in a year. The magnolias have been very much neglected; *M. acuminata* is a very fine tree, with beautiful foliage, and perfectly hardy, but difficult to transplant. *M. tripetala* has the ends of the shoots winter-killed, but is nevertheless very desirable. *M. Lennei* is a very fine variety, with large purple flowers, and sufficiently hardy. *M. tripetala* and *M. acuminata* grow freely from seed, while the Chinese species are reputed not to germinate well, but the speaker saw no reason why they should not.

Mr. Strong said that the seeds of *Magnolia Soulangeana* come

up as easily as peas, but no magnolia seed should be allowed to get dry.

Mr. Hovey said that twenty-five or thirty years ago he imported the *Abies Cephalonica* from Waterer and now he has but one tree left; almost all were killed down to the snow line very soon. Twenty-five of them were set in a line, next to a row of *Thuja Sibirica*, and grew up and made a thick hedge, but the sun struck all except one end, where stood the only one now remaining. This has reached the height of twelve feet. It is very remarkable for its stiff, silvery foliage—glossy green on one side and white on the other. This succeeds better in Mr. Hunnewell's ground, where the soil is light and dry. Mr. Hunnewell has also very fair trees of *Cedrus Atlantica*, *C. Deodara*, and others which do not succeed with the speaker.

F. L. Harris, gardener to Mr. Hunnewell, said that at the grounds at Wellesley the variegated *Negundo* had done remarkably well. There are specimens from three to twelve feet high, and they are seldom injured. Some are in the sun, and some in shade; the latter hold their color best. The purple maples are equally hardy; *Acer polymorphum atropurpureum*, one of the Japanese species, retains its color until the first of July, when it turns green. The later growth is like the first, and the contrast with the green is pleasing. He had not much to say in favor of the other Japanese maples with the exception of *A. polymorphum sanguineum*, which, though a vigorous grower, is not so highly colored as *atropurpureum*. The foliage of the fern-leaved varieties crumples up, and they look as if they needed water or some stimulant. He had never succeeded in raising either *Magnolia Soulangeana* or *M. conspicua* from seed.

Mr. Strong remarked that *Acer polymorphum* is the stock on which *atrosanguineum* and other Japanese varieties are grafted. Mr. Harris is sanguine about many trees from which others cannot get the results that he does. The *Acer Colchicum rubrum*, of the Norway type, is perfectly hardy; the speaker has a tree thirty feet high which he transplanted when it was twenty-five feet high. The young leaves are scarlet and become green when older. The purple birch is very valuable; early in the season it is not so deep colored as the purple beech, but later in the season it is darker than the beech, and has a metallic lustre. He sows magnolia seeds as soon as gathered, first rubbing off the outside cuticle. He did

not know that *Magnolia Lennei* has fruited in this country. Mr. Parkman has raised large numbers of seedlings of the Chinese magnolias; the speaker had bought seedlings of him. Mr. Parkman used to get seed from John Kenrick's trees; the seedlings vary a little.

Mr. Wilder said that he had often tried to germinate the seed of Chinese magnolias, but without success; that of the American species grows very readily. No European nurseryman has advertised seedlings of *Magnolia Soulangeana*.

Mr. Strong did not wish to be understood as saying that he had raised *Magnolia Soulangeana* from seed in quantity.

William H. Spooner confirmed Mr. Strong's statements in regard to Mr. Parkman's success in raising Chinese magnolias from seed.

Mr. Hovey spoke of the golden poplar and the golden syringa as very beautiful; the latter is especially golden.

It was voted to continue the discussion of the subject on the next Saturday.

BUSINESS MEETING.

Saturday, March, 5, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, Vice-President John B. Moore in the chair.

The decease of four members of the Society,—E. Fred Washburn, Henry Vandine, Hon. John C. Gray, and George B. Emerson, LL.D.,—was announced and a committee consisting of Hon. Marshall P. Wilder, John C. Hovey, John G. Barker, Charles M. Hovey, and William C. Strong, was appointed to prepare memorial resolutions.

The following named persons, having been recommended by the Executive Committee, were on ballot duly elected members of the Society:

William A. Bock, of North Cambridge.
Georg A. Schmitt, of Boston.
Charles W. Norton, of Allston.
Herbert Merriam, of Weston.
Frederick M. Safford, of Dorchester.
E. Francis Bowditch, of Framingham.

Adjourned to Saturday, March 12.

MEETING FOR DISCUSSION.

The subject of the last discussion, "The Hardy Trees, Shrubs, and Plants, of recent introduction, most worthy of notice," was again taken up, and F. L. Harris, gardener to H. H. Hunnewell, opened the discussion by reading the following paper on the subject:

Mr. President and Ladies and Gentlemen:

I think it quite unnecessary to speak particularly of the older species and varieties of evergreen trees and shrubs, for they have been frequently brought to your notice by many practical cultivators, through whom their adaptability to withstand the severities of our climate has become fully recognized, not only by the members of this Society, but by lovers of horticulture through the length and breadth of the land. It may not be out of place, however, to state a few facts in reference to some of these, because every close observer discovers by years of experience many ways of doing things that may prove novel and interesting. I shall, therefore, touch upon a few that are familiar to you all.

First, then, we have the *Abies Alcoquiana*, *A. polita*, *A. Sitchensis*, and *A. Maximowiczii*. They are comparatively rare here, but they are all very desirable, particularly the last, which is close and compact in habit, with the foliage short and very rigid, and the underside of the leaf quite glaucous.

In regard to the *Abies Douglasii*—one of the most beautiful of all—it has been proved that trees imported from Europe seldom survive our winters, but grown here from Rocky Mountain seeds they prove equally hardy with the Norway spruce. The trees of the latter description at Wellesley are now eighteen feet high. I notice that this species, like all the others, prefers a very deep soil; say three feet in depth to the extent of fourteen or fifteen feet in diameter.

Picea Cephalonica is a tree of great beauty; our specimens are twenty feet high, and for several years we have been in the habit of surface dressing around them with strong manure, and it is perfectly astonishing to see the difference between those thus treated and the little miserable starvelings usually seen. I say then, manure all conifers, and you will be fully repaid in the vigor and healthfulness of your trees. The manuring of evergreens was, twenty years ago, almost unknown, but today I think it is the only road to success.

Picea nobilis is not very generally known, and yet when it becomes so, I think it will be acknowledged that it cannot be excelled in majesty. *Picea Nordmanniana* is a grand tree; in its youth it is difficult to get a leader, and in this case the side branches should be judiciously pruned, which is best done in April and May, as is the pruning of all other conifers or evergreens. *Picea Veitchii* is an elegant tree, a rapid grower, and every way worthy of attention.

I know of no class of evergreens so well calculated to give general satisfaction as the *Retinosporas*. Their peculiar forms and colors, both in summer and winter, afford the greatest pleasure. Many of the varieties are dwarf in habit, while others grow from twenty-five to thirty feet high. *Retinospora plumosa*, *R. plumosa aurea*, *R. squarrosa*, *R. obtusa*, and *R. filifera*, are among the most valuable. *R. plumosa aurea*, is, above all others, one of the most desirable, it yields so readily to the pruning shears. For topiary work it is unequalled, and particularly for edgings to beds, or it may be planted in masses and cut into any form chosen. Ribbons may be made of any desirable length, composed as follows,—the first row next the grass, *Euonymus radicans variegata;* second row, *Retinospora decussata;* third row, *R. plumosa aurea;* fourth row, *R. squarrosa.*

Retinospora filifera aurea will probably become the most beautiful of all, appearing in the distance like a fountain of yellow interspersed with green. It is perfectly hardy, as are also *R. obtusa Keteleeri* (handsome), *R. filicoides*, *R. lycopodioides* (singular), *R. gracilis*, *R. obtusa variegata* (a low grower), *R. obtusa pendula* (very pretty), and *R. decussata*, which is remarkably glaucous in summer and dark brown in winter, and of erect growth.

Thuiopsis Standishi is the most hardy of its genus, and a very desirable evergreen. *T. dolabrata* and *T. dolabrata variegata*, delight in shady nooks, yet not immediately under the foliage of other trees. In the sun they will brown, especially the *variegata*. *T. lætevirens*, is dwarf and very pretty.

Taxus adpressa, I have found to be the hardiest of all the yews. The foliage is small and dark green, and the habit of the plant spreading.

Of the *Thujas*, or arbor-vitæs, *T. gigantea* is quite hardy, and destined to be one of the really ornamental trees. *T. occidentalis Vervaeneana* is quite distinct; it has beautiful yellow foliage. It

surpasses the George Peabody; perhaps, indeed, it is the most beautiful of all. As Thuja Queen Victoria grows older and more dense, the peculiar silver points at the ends of the growth become brighter. It is quite a desirable variety.

Juniperus communis var. *Cracovia*, I think is not generally known; it is certainly much more hardy than either the Swedish or Irish species. *J. Virginiana Burkei* is one of the best of all; its narrow, erect, almost columnar, mode of growth gives it an attractive and unique appearance. It resembles *J. Virginiana glauca*, and is perfectly hardy. A golden variety of juniper—a creeping form of *J. prostrata*, from Mr. Douglas—is a rapid, spreading grower, and maintains its rich, golden tint through the summer, looking in autumn like a mass of bronze, and showing the same today through the snow. It may be used as a margin, or edging, to clumps of rhododendrons. *Juniperus Youngi aurea*, is beautiful and hardy.

To come to deciduous trees, I should like to know why it is that Young's weeping birch, when grown as a standard in this country, appears so unlike those received from England. All those I have seen worked here at a height of from six to eight feet, droop immediately, whereas those from Europe, grafted low down, go away rapidly with a bold leader, with the laterals weeping close to the stem of the tree. I prefer the latter.

Robinia Pseudacacia Bessoniana, when better known, I think will be highly esteemed, for I know of no tree equal to it for rapidity of growth. Its foliage is dense, and its flowers are produced in profusion, and are very ornamental. I am not sure but it may be planted extensively in this country for timber, provided its wood proves as durable as the common locust. I hope some of our friends, who have the means and land, will plant it so extensively as to test its merits in this respect.

One more and I have done. The *Hydrangea paniculata grandiflora* is so well known, that it would appear as though nothing more could be said in its favor; yet, it seems to me that if some of our nurserymen were to train plants as standards, say from six to eight feet high, we should regard them with still more favor. At that elevation, its immense panicles, almost touching the ground, would not require the least support, whereas, when grown as it usually is, it requires a number of stakes to support it, especially after a drenching rain. We have one at Wellesley, with a stem

seven feet high and a head five feet across. I hope some of our nurserymen will take the hint and act accordingly, for I am satisfied that when grown in this way it is far preferable to any other form. To prune this shrub, cut back all the previous year's wood to two eyes from the old wood.

Discussion.

Jackson Dawson said there are two varieties of *Hydrangea paniculata grandiflora*, one of which resembles *H. arborescens*.

Charles M. Hovey said that the date of introduction of every fruit, flower, and shrub is recorded in the "Magazine of Horticulture." The *Viburnum plicatum* was introduced in 1848; *Exochorda grandiflora* in 1859, and *Hydrangea paniculata grandiflora*, in 1868, or earlier, and now it is talked of as new. He first got it under the name of *Hydrangea deutziflora*.

William C. Strong said that the habit of growth of *Hydrangea paniculata* (the type) is more upright than that of the variety *grandiflora*.

Mr. Dawson said there is the same distinction between *Hydrangea paniculata* and the variety *grandiflora* as between *Viburnum Opulus* and the variety *sterilis*.

Mr. Hovey spoke of the *Prunus triloba* as a most beautiful shrub, with wreaths of rosy pink blossoms, and of the *Spiræa prunifolia* as most desirable for the beautiful color of its foliage in autumn—amber and gold. *Viburnum macrocephalum* is good. He imported *Negundo aceroides variegata* in pots in 1859, and *Magnolia Lennei* from Van Houtte in 1856.

Mr. Harris remarked that nothing is more ornamental in the conservatory than *Negundo aceroides variegata*.

Mr. Hovey said that *Forsythia suspensa* flowers before almost anything else. It may easily be trained as a standard, in which form it is very beautiful, with its drooping branches and clear yellow flowers. *Pavia macrostachya* (the dwarf horse-chestnut) is most beautiful and massive. He has a tree forming a mass twenty feet in diameter. *Spiræa Thunbergii* is a very desirable species. The Messrs. Veitch used it for edgings to beds in their camellia house. *Pyrus Maulei* has fruit even more ornamental than the flowers; the former are about the size of a Coe's Golden Drop plum. *Daphne Cneorum* blooms the whole summer through and the pink flowers are very fragrant. *Philadelphus thyrsiflorus* is a

most showy plant; he has a specimen eighteen feet high which has borne ten thousand flowers; shoots seven feet long were covered with them, and the individual flowers are larger than those of *P. grandiflora*. The *Salix Napoleona* is nothing but the old weeping willow, *Salix Babylonica*.

Mr. Dawson said that *Salix Japonica pendula*, from Japan, has narrower leaves than the common weeping willow, and makes a growth eight or nine feet long in a season, and seems to be a very desirable variety. He went on to speak of a large number of shrubs now cultivated at the Arnold Arboretum (where he is gardener), which have either proved, or promise to be, desirable for general cultivation. Some, which are new to us, may be old plants that have been neglected and laid aside and are now reintroduced. Some may not prove hardy, and some may need slight protection.

Xanthoceras sorbifolia has proved perfectly hardy, and is very beautiful, bearing a profusion of white flowers with pink centres.

Malus Toringo (*baccata*) grows from ten to twelve feet high and is covered with semi-double pink flowers. *Malus floribunda* is perfectly hardy, and bears full of rosy pink flowers. At the Arboretum there are three varieties of *Malus spectabilis*,—the double white, double pink and single white. They can be kept down to three feet in height, by pruning.

Staphylea Bumalda is not hardy when young, but in two or three years it becomes capable of resisting the cold. The flowers are almost pure white, and would be fine for forcing. It is from North China and Japan. *Staphylea Colchica* and *S.* pinnata are hardy.

Deutzia parviflora is more like a *Spiræa* than a *Deutzia*, and is one of the finest new species, as is also the true *Deutzia scabra*—not the old variety under that name, which is a rough-leaved form of *D. crenata*. The new one was brought from Japan by Thomas Hogg, and the speaker had it on the authority of Samuel B. Parsons. If not the true *Deutzia scabra*, it is the exact counterpart of Siebold's plate of that species.*

Mr. Hovey said that if the *Deutzia scabra* mentioned by Mr. Dawson is new, it is different from that described by Loudon,

* Mr. Dawson states that he was informed by Mr Hogg, who introduced the true *Deutzia scabra*, that in Japan it rarely grows above two feet in height and is entirely distinct from all other species, both in flower and habit.

Don, and others. The leaf of the kind commonly cultivated under that name is rough.

Mr. Dawson said the leaf of the true *Deutzia scabra* is rounder than that of the one commonly cultivated under that name. The bark peels off from all the species as the plants become old. He then resumed his remarks on shrubs at the Arnold Arboretum.

Cytisus nigricans has the cluster of pale yellow flowers upright instead of drooping, and is perfectly hardy.

Lonicera hispida, from St. Petersburg, is also perfectly hardy; it trails like *Arctostaphylos Uva-ursi*, and is well adapted to rock-work. *Lonicera Maximowiczii* is a very rare upright honeysuckle, perfectly hardy, and one of the most desirable late introductions.

Actinidia polygama is a beautiful climber, and said to produce a delicious fruit.

Philadelphus coronarius var. *Schrenkii*, is of very dwarf habit, and flowers very early—a week or ten days before any other species. *P. coronarius* var. *tomentosa*, promises well. *P. hirsutus* is softer and more delicate—one of the prettiest of all.

Rosa rugosa and the variety *alba* or *Regeliana* are desirable.

Mr. Harris thought *Rosa Regeliana* distinct from *R. rugosa;* the flowers of the former are four inches in diameter, and the fruit covers the plant in autumn.

Mr. Hovey remarked that *Rosa tacoum* is slug proof.

Mr. Dawson still thought *Rosa Regeliana* but a variety of *R. rugosa*. He said that *Rosa rubrifolia* has very fine purple foliage, which it holds through the hottest weather, and Mr. Harris agreed with him.

Rubus villosus semi-pleno is a very fine double-flowered variety of the common high-bush blackberry, and desirable as adding another variety to a garden where there is sufficient room.

Tamarix Sinensis is an old plant; it is more hardy than any other of the genus, and is worthy of cultivation for its delicate foliage and flowers—the latter appear a month or two months later than those of any other species.

Styrax Japonica is perfectly hardy in dry soils. It has white flowers very similar to those of *S. Americana*, but perhaps a little larger. The latter is a very pretty shrub, from four to six feet in height, which ought to be in every collection; the flowers resemble those of the *Halesia* or silver bell.

Viburnum macrocephalum is also hardy.

Dolichos Japonicus is new, and a most rapid climber, having grown forty feet in one year.

Hypericum prolificum; H. aureum, from the Missouri river, and *H. Kalmianum*—the last an old sort but not much cultivated, beginning to flower nearly a month earlier and holding on a month later than *H. prolificum*, are all desirable.

Mr. Hovey said that E. L. Beard has a fine plant of *Hypericum patulum*, which has stood out-doors three years.

Mr. Dawson said that *Hypericum patulum* was always cut to the ground with him, but came up sufficiently to flower. Hardiness depends greatly on treatment. Plants of doubtful hardiness should have a good, well-drained soil, and a chance to ripen up their wood. Mr. Harris agreed with this.

Mr. Hovey said that his soil has a clay bottom and is unfavorable to plants whose hardiness is doubtful. Anything that will stand on his grounds will stand anywhere in the United States. The Bussey Arboretum and Mr. Beard's garden are on elevated, gravelly soil.

Mr. Dawson said that *Berberis Sinensis* is perfectly hardy, grows two to three feet high, and is of drooping habit. When full of ripe fruit (which is less acid and "peggy" than that of the common barberry) it looks like a fountain of scarlet. *Berberis Thunbergii* has fine autumn foliage, and, when the fruit, which is of a deep, rich, scarlet color, is ripe, forms a perfect picture. It is a low-growing shrub.

Desmodium penduliflorum, *D. penduliflorum album*, and *D. Canadensis* are hardy on dry soils. All are suffruticose rather than shrubby. The first two are especially valuable on account of blooming late in autumn, when there are but few flowers. The flowers of the first are purple, and all are pea-shaped.

Cerasus Japonica flore pleno is more double and whiter than the old double flowering cherry, and blooms later.

Prunus Sibirica is a very desirable variety, flowering early in spring. *Prunus Myrobalana* is one of the earliest trees to flower in the spring.

Mr. Hovey remarked that the last-named tree grows very rapidly, and the wood, when burnt, perfumes the room.

Mr. Dawson added that the Germans grow it for "zwetschenwasser."

Clematis Davidiana and *C. tubulosa* are erect growing species, from two to four feet high, and in midsummer are covered with

beautiful blue flowers like panicles of hyacinths. Unfortunately they do not seed freely and are rather difficult to propagate. *C. Davidiana* is the more desirable of the two. *Clematis graveolens* (*orientalis*) is perfectly hardy and a very rapid growing climber; it has yellow flowers. *C. coccinea* is the prettiest of all the hardy species; the flowers are brilliant crimson. It is a climber from Northern Texas; not hard-wooded, but dies to the ground.

Leiophyllum buxifolium has stood in the Botanic Garden at Cambridge for twelve years. It is a small evergreen shrub, growing about a foot high. A larger form, from the mountains of North Carolina, has a larger leaf of a more waxen appearance.

Spiræa confusa var. *mollis*, is one of the earliest and prettiest. *S. lævigata* is a curious species from Siberia; the flowers are not of much account, but the foliage is beautiful. *S. Lenneana*, from St. Petersburg, has bright, rosy pink flowers. *S. Tobolski* resembles *S. sorbifolia*, but flowers three weeks later, and is perfectly hardy.

Nelia (*Spiræa*) *Amurensis* is similar to *Nelia Opulifolia*, but the corymbs are much larger, and about two weeks earlier in blooming.

Jamesia Americana resembles *Spiræa Reevesiana;* it grows two feet high. It is from the Rocky Mountains.

Neviusia Alabamensis belongs to the rose family; it has numerous bunches of pure white flowers, and is quite showy. Though from Alabama, it is perfectly hardy.

Aralia pentaphylla is perfectly hardy and desirable for the beauty of its foliage, which is of a bright glossy green.

Erica vagans, *E. vagans rubra*, *E. carnea*, and *Calluna vulgaris* all do well on thoroughly drained land with a slight covering; if the snow blows off and leaves them bare, they burn.

Andromeda polifolia is a native species, which under cultivation becomes one of the gems of the garden. The foliage is of a glaucous color. It is perfectly hardy. *Andromeda Catesbœi* is of rapid growth and easily propagated. When planted with rhododendrons, nothing is more beautiful, and with the protection which they afford it is perfectly hardy; if not sheltered the ends of the shoots are sometimes injured. *Andromeda floribunda* is the finest of all. *Andromeda Japonica* is perfectly hardy. It has been cultivated by Mr. Parkman for ten years, and he has never covered it. It wants to bloom too early in the spring, but five years out of six it will be good. Mr. Dawson exhibited a small plant in

bloom which he took from a cold frame and placed in heat only ten days before.

Cassandra calyculata, a native of Massachusetts, is very beautiful under cultivation. The speaker expressed the opinion that if all the beautiful shrubs of our State were gathered together there would be a sufficient variety to form a most beautiful garden.

Mr. Hovey mentioned the *Clethra alnifolia*, found abundantly in this vicinity, as one of the most beautiful shrubs.

Mr. Dawson added that one of our native trees, a variety of *Pinus strobus*, is destined to take a place among the finest pines. The original tree is fifty feet high, with a head from twenty to twenty-five feet through, and as round as if it had been clipped. Seedlings from it have the same habit. It is in the town of Dracut, but the exact locality has been kept secret.

Mr. Harris said that the variegated *Pinus Massoniana* is the finest of all variegated evergreens. The best specimen in this country is at Wellesley.

Benjamin G. Smith said that he was much pleased to hear Mr. Dawson speak in praise of native shrubs. The late Joseph Breck pronounced the *Kalmia latifolia* the finest of all shrubs. In the experience of the speaker the *Andromeda floribunda* has proved a brave shrub, well furnished with flowers, and as hardy as an oak.

Mr. Hovey said that between 1790 and 1800, Lyon and Fraser carried from this country to England nine hundred varieties of trees and shrubs, the sale of which at auction occupied several days. On their second visit they carried home three hundred or four hundred varieties.

Mr. Lewis said that the great trouble with cultivators is to know what is hardy. Many things would be hardy at Wellesley that are not hardy on Mr. Hovey's grounds. Mr. Dawson hit the nail on the head when he said that shrubs should have a thoroughly drained soil, and that the wood must be well ripened to stand the winter.

It was voted that a committee of five be appointed by the Chair to prepare a list of the best twenty deciduous shrubs, the best twenty deciduous trees, and the best twenty conifers, and report at a future meeting. Henry Winthrop Sargent, H. H. Hunnewell, William C. Strong, William Gray, Jr., and Charles S. Sargent were appointed as that committee.

Benjamin G. Smith, Chairman of the Committee on Publication and Discussion, announced that the subject for the next week would be "Vegetables and their Culture."

BUSINESS MEETING.

SATURDAY, March 12, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, Vice-President John B. Moore in the chair. No business being brought before the meeting it

Adjourned to Saturday, March 19.

MEETING FOR DISCUSSION.

The subject assigned for today was "Vegetables and their Culture" and the Chairman called on Benjamin G. Smith to give his method of cultivating the Lima bean.

Mr. Smith said that having been quite successful in the cultivation of this vegetable he had been frequently asked for his method. He sows the seed about the middle of April (being careful to place the eye down), in what are known as "cucumber boxes," filled with loam, five seeds in each. The boxes are without bottoms, six inches in height, seven inches square at the top and eight inches square at the lower part, and are made of half-inch stuff. They cost six dollars and a half per hundred, and his have already been in use ten years. He was first to use them to forward Lima beans, and finds them invaluable for this purpose. When the beans are planted the boxes are placed in the cold grapery. When the plants are about two feet high the ground is prepared and the poles are set out, and a hole large enough to receive the box is made at the foot of each. A box is then lifted on a shovel and placed in the hole and the shovel withdrawn. The box is then removed by lifting up; the object of making the top an inch smaller than the bottom being to permit this. It is not advisable to set out the young plants before the first of June, but this is as early as the seed can be planted out-doors, and by forwarding in this way five weeks can be gained, and the beans can be had fresh from the garden from the middle of August to the middle of October. The

Lima bean is a tropical plant and requires a long season. Any surplus can be dried for winter use, and when soaked can hardly be distinguished from fresh beans. In saving seed the earliest beans should be carefully selected.

Hon. Marshall P. Wilder said that all who have visited the markets in Philadelphia must have noticed that no vegetable is so popular there as Lima beans. Through the winter they are soaked over night and sold ready to cook. He agreed with Mr. Smith in regard to their value for winter use, and said that he had still a barrel on hand in the pod.

E. W. Wood said that lettuce is forced very extensively in the vicinity of Boston, and three quarters of the crop is sent to New York, and the same with roses. They both bring a higher price than those grown there. It is certainly very remarkable that coal should be brought here from Pennsylvania to force vegetables, and the product sent to New York. Some time ago, several New York rose growers visited Boston, and spent two or three weeks in examining the method of culture, and took back some of the most skilful gardeners, but they were no more successful at New York than others, and all have returned. "Boston Roses" are advertised in all the florists' stores there, and it is the same with lettuce and cucumbers as with roses. The New Yorkers will pay a higher price for forced vegetables than Bostonians; when forced cucumbers first appear they bring six dollars per dozen, but few are sold in Boston until they get down to ten dollars per hundred, when they are preferred to the Southern product at two dollars per hundred. Many lettuce growers have substituted houses for hotbeds, but though there is no difficulty in growing lettuce in them until heading commences, at that time the top of the head is apt to slough off, or "burn" as it is called. The same trouble occurs in hotbeds to a less extent. It is not burning; the sun strikes the glass too obliquely in January. It is most frequent in cloudy weather, and especially after several successive days of such weather. Sometimes the greater part of the crop has to be thrown away, and growers would be very glad to know the reason of the trouble. The White Seeded Tennisball is best for forcing, and the Black Seeded Tennisball for out-door culture.

William C. Strong thought that we have a brighter sun and a clearer atmosphere than at New York, and that the greater success in forcing flowers and vegetables here might be partly due to that

cause. The color of Bon Silene rosebuds grown here is brighter than that of those grown at New York. It has been supposed by some that the variety is different, but this is not correct. He thought the sloughing of lettuce is caused by dampness and the houses not facing due south. His own houses have this aspect, and he thought that if Mr. Wood's had had the same there would have been less of sloughing off in his lettuce. Unless a house faces the sun the frames do not receive the direct impact of the sun's rays, and are hard to dry off in dull weather.

The Chairman said he had forced lettuce in hotbeds for two or three years, and had had little trouble from rot, but did not like the price it brought. He thought the rot was caused by dampness, for he found most of it under the sash. He had not grown lettuce in a house. He begins in fall and transplants twice; the first time the seedlings are set three inches apart. Lettuce must have plenty of air and be grown slowly. At a low temperature there is not so much trouble with the aphis as at a high degree. It is very hard to get rid of when on the under side of the leaf. Smoking will not do it. Some cultivators grow lettuce to half size in houses, and finish in hotbeds.

Horse dung brought by railroad is not equal to fresh for making heat. The box used by Mr. Smith for transplanting Lima beans is equally good for cucumbers — indeed they are called "cucumber boxes." There is no difficulty in removing tomatoes. When it can be done, it is best to transplant them twice—the second time into eight inch pots—and give plenty of air. Then, when placed in the open ground they are fine, stocky plants, in bloom, and go right along; but this is too much work for market gardeners.

Mr. Wood said that William D. Philbrick has a lettuce house two hundred feet by twenty-six, facing south, and has just as much trouble with the rot as in houses running north and south. Mr. Wood had seen no aphis in his house for three years, and thought that if houses are well aired, and fumigated once a week, there would be little trouble from it. It is a hard-shelled insect, and difficult to get rid of when grown.

Mr. Strong said that Mr. Philbrick's houses are very wide and flat-roofed, and that it is impossible to give air and dry them off thoroughly.

William H. Hunt thought that one great advantage of living in the country is to have fresh vegetables, but it is not appreciated

here as it is in France, where they hardly ever fail to have some green salad every day in the year. It is very healthy, yet few families have it, but he had endeavored to. People in the country should take more pains to have a variety of vegetables, especially fresh ones.

Leander Wetherell regarded the subject under discussion as of the highest importance. Quality should be considered before quantity. He related an anecdote of an English root grower, who, when a farmer brought him an enormous mangel-wurzel, said it was a very good way to raise wood. Such overgrown beets and turnips are coarse, and crops when the quantity is less to the acre possess more feeding properties, as has been proved by chemical analysis. It is the same with the sugar beet, whether grown for food or for sugar. The most profitable potato and the one that sells best is the Early Rose. The market price last year and this was from five to ten cents per bushel higher than that of any other variety. The Snowflake is better for baking, but not so good for boiling, and is not so productive. The best quality is always in demand. The Early Rose grown in Canada is not as good as when grown here, but those raised at Houlton, Maine, are better than ours. This variety is often grown too large, when it becomes coarse. Quality is not enough studied by vegetable growers.

Mr. Wilder said that the Early Rose is the only potato used in his family. It is both early and late. There may be others as good.

Mr. Wetherell said that Bresee's Prolific is of better quality than the Peerless, but not so productive. The Prolific grown at Houlton is better than anywhere else. The Early Rose is the most productive of all.

The Chairman had found the Early Vermont more prolific than the Early Rose, and it is said to be fifteen minutes earlier. It is a seedling from the Early Rose, and he prefers it to its parent because the vine is stronger. For market he wants the largest potatoes he can get, because they bring more; but for his own eating he chooses those of medium size. The Snowflake, and some others, are of better quality than the Early Rose. In June, he prefers the Mammoth Pearl, a variety which originated in Ohio; it is very productive, has remarkable keeping qualities, and is very white when cooked. Vegetables are of better quality for having good culture and growing rapidly. There is no difficulty in grow-

ing good potatoes. He grows fewer small potatoes than his neighbors; they are worth little more than the cost of picking up. If whole potatoes are planted they produce too many vines, and there will be many small potatoes, and only one or two strong, vigorous ones. He cuts up good, strong potatoes into pieces with two eyes each. He has seen splendid crops from small potatoes, but on general principles would not recommend planting them. Potatoes are smoother for not overseeding.

Mr. Wetherell said that his brother planted one-half a field with medium sized potatoes, and the other half with small ones; the yield of the former was more than double that of the latter.

William C. Strong spoke of B. K. Bliss's experiments in producing a stock of the Early Vermont potato from green cuttings, and said that the tubers produced were as large as those grown in any other way. The cuttings are made like verbena or fuchsia cuttings. It is the same with the Early Rose; under the same culture the tubers are as large, and the quality as good, as when grown from tubers.

John Fillebrown was called on as a skilled market gardener. He thought the Hill's Early, an Arlington variety, the best early pea; it yields well. It is difficult to tell how to grow sweet melons. If too much rain comes on them when they are two-thirds grown, the whole crop is destroyed. Last year the aphis came on them in such myriads that it was useless to attempt to keep them under.

Mr. Wilder said he had tried all the new kinds of peas, but did not get much ahead of the Champion of England in quality. The Dan O'Rourke and Landreth's Early are very much alike. He thought the Dan O'Rourke, McLean's Advancer, and Champion of England a good selection for early, medium, and late.

The Chairman said that he cared only for the wrinkled varieties of peas; the quality of the early, round, yellow peas is so inferior that he does not plant them. McLean's Advancer is second early and of fine quality. The Champion of England makes too much vine; there are others of as good quality that do not grow so high. The tall ones rot.

Charles E. Grant approved the McLean's Advancer for medium season, and the Champion of England for late. The very early kinds, like Dan O'Rourke, Caractacus, Hill's Early, and Philadelphia Extra Early, are all substantially alike.

Aaron D. Capen said that he bought of Daniel T. Curtis two quarts of seed peas; the fourth picking of the product sold for two dollars per box, and the gross proceeds of the crop were between twenty-four and twenty-five dollars. The variety was the Early Kent. Twenty-five years ago he was advised to cut off the seed end of potatoes and feed to the cows, and plant the other end, and he had found that by following this advice and cutting the potato so as to have only one or two eyes on a piece, his crop was more uniform in size and of better quality, and he was not troubled with so many little sprouts and small potatoes.

The Chairman said that many experiments had been tried in planting the seed end, middle, and base of the potato, and sometimes one plan had succeeded best and sometimes another.

Mr. Wood expressed the opinion that the Early Rose and Early Vermont potatoes are the same; he bought seed of both kinds of Mr. Moore, and took pains in planting both in the same field to keep them distinct, but could see no difference in foliage, strength, yield, size, or eating quality.

The Chairman said there is little difference in the height of the tops, but quite a difference in productiveness. He cannot tell them apart in the barrel, and the quality is the same. There are more Early Vermont potatoes sold in Boston market for Early Rose, than there are of the true variety.

Mr. Wood asked if the old potato did not afford nourishment to the young plant, which a mere sprout did not receive. He thought the fact that a sprout attached to an old potato can be transplanted without wilting, while a detached sprout cannot, showed that the old potato does afford nourishment.

The Chairman said that he had grown many potatoes from cuttings, and thought Mr. Strong was correct in the opinion that they produce as good tubers as pieces of potatoes. As to nourishing the plant, the old potato is frequently found whole in autumn; the young eye soon throws out a whole system of roots, and as soon as these get at work, the old potato is of little consequence.

Mr. Wetherell said that the farmer who plants potatoes whole is most certain of good crops.

The Chairman said that he had been growing potatoes all his life, and would not let a man plant whole potatoes on his ground if he would give him the seed. He would have two eyes on a piece, but no doubt experiments can be quoted in favor of both ways.

Mr. Wetherell said that he had a good farm and would not allow a man to cut a potato to plant. These discordant opinions can only arise from our failure to take note of all the conditions under which our crops grow.

Mr. Capen agreed with Mr. Moore in regard to cutting potatoes, but preferred only a single eye on each piece. Some break off the sprout when an inch long, and repeat this process four or five times and then after planting the sprouts they plant the potato. Two men may plant alongside of each other and get very different results, and in 1881 you may get very different results from those produced in 1880 by the same method.

Mr. Hunt agreed with Mr. Moore in regard to cutting potatoes rather than planting whole, and thought the former was the general practice. He thought that the young sprout gets a certain amount of nourishment from the piece of potato to start it. In his experience the Beauty of Hebron is more productive and of better quality than the Early Rose.

Rev. F. L. Capen said he had found that the first blossom on a shoot of a tomato plant fails to produce fruit, and he had pinched off the ends of the shoots to cause them to develop, and had succeeded. He asked if any one had propagated from seed of the fruit from the first blossom.

The Chairman said that the first blossoms often set fruit.

Rev. Mr. Capen thought that tomatoes are generally planted too near together—about three feet—they should be five or six feet apart. He thought it would pay to train them on a cheap trellis.

The Chairman said that training and pinching tomatoes would do for amateurs, but not for market gardeners. All the money the latter make on tomatoes is in the first three weeks, and they would have no use for trellises. The Acme took the first prize last year, and it is productive and of fine quality, but it is not so early by five or ten days as some other varieties.

Mr. Wilder said that the Paragon is as good as the Acme. Mr. Livingston, who originated the Acme, says that the Livingston's Perfection is superior to the Acme. These improved tomatoes are as rich in their way as a fine peach in its way, and only want a little sugar added to them. The speaker thought that the tomato had been brought to perfection, and that it is a matter for rejoicing that any vegetable can be improved to so high a point. For home cultivation tomatoes are greatly improved by training; he

planted them against vacant spaces on his grape trellis, and they grew six or eight feet high and produced four times as much as those trailing on the ground.

Mr. Grant said that he invariably trains his tomatoes to an open fence, trellises, or brush, and the fruit keeps sound and perfect longer than when lying on the ground. He deems a trellis of some kind indispensable.

George W. Humphrey said that he set twenty-seven plants against a slatted fence, and though he cut off the ends of the shoots beyond the blossom, to throw all the sap into the fruit, they reached the top of the fence, which was six feet high, and would have gone further but were not allowed to. They were watered with guano water and produced most abundantly.

The Chairman said that he had been requested to speak of his success in raising plums. He thought the time had come when there should be no difficulty in raising this fruit. He felt the want of such plums as he had when a boy, and he got thirty trees from Ellwanger & Barry to see whether he could beat the curculio. He planted them in his hen yard and trimmed them up so that the hens should not fly up into them, and they have borne considerable fruit for the last two years, and there has not been a curculio mark to be seen on it. The trees get manure enough from the droppings of the hens. Four trees outside had the fruit marked with the curculio, but he dug out the eggs with the point of his knife, and they matured good crops. The only trouble in raising plums, besides the curculio, is the black knot, and he had had only two or three of these, which came out on the trunks of the trees. He cut them out to clean, sound wood, removing all that had a diseased, granulated appearance. It is said that the spores of the fungus which causes the knot, mature after the knots are cut out, and to avoid the risk of their propagating, he put all that he cut out into the stove. The wild plum and cherry trees on which the knot is also found, should be cut down and burned. He shortened the long, vigorous shoots two-thirds, so as to make broad, spreading trees, rather than tall ones, and the result is some very vigorous and pretty trees. In jarring trees to shake down the curculio there is danger of starting the bark, but the hens lay eggs, raise chickens, and take care of the curculio. He was surprised to hear an old horticulturist like Mr. Hovey, maintain that the black wart is caused by the curculio. Some of the best plums are the Green

Gage, Washington, Jefferson, Smith's Orleans, Pond's Seedling, Bradshaw, Lawrence's Favorite, Imperial Gage, and Coe's Golden Drop. He planted his trees about twelve feet apart. Cutting back has a tendency to produce a good deal of small wood. He saw no reason why he and all others should not raise plums.

Mr. Smith said that he had six plum trees which he got from Ellwanger & Barry. These gentlemen exhibited at the Mississippi Valley Horticultural Society's Exhibition at St. Louis, last year, fifty varieties of plums, and at the Centennial Exposition in Philadelphia, more than all others except Canadian growers. We have been told that it is of no use to try to raise plums, but if Ellwanger & Barry can do it, others can.

The Secretary announced that Charles S. Sargent had declined serving on the Committee to prepare a list of trees and shrubs, and John Robinson was appointed in his place. Jackson Dawson was added to the Committee.

BUSINESS MEETING.

SATURDAY, March 19, 1881.

An adjourned meeting of the Society was holden today at 11 o'clock, Vice-President Benjamin G. Smith in the chair.

A package of seeds from J. L. L. F. Warren, of San Francisco, Cal., was received, and the thanks of the Society were voted to Col. Warren therefor. The seeds were placed in the hands of the Committee on Plants and Flowers, for distribution among the members.

Adjourned to Saturday, March 26.

MEETING FOR DISCUSSION.

The committee appointed at the meeting on the fifteenth of January, to prepare a list of the forty-eight most desirable Hybrid Perpetual Roses, reported the following which was accepted:

WHITE.

Mlle. Bonnaire, ...	*Pernet*, ...	1859.
Baronne de Maynard, ...	*Lacharme*, ...	1865.

BLUSH.

Mme. la Baronne de Rothschild,	*Pernet*	1867.
La France,	*Guillot, fils*,	1867.

PINK.

John Hopper,	*Ward*,	1862.
François Michelon,	*Levet*,	1871.
Marguerite de St. Amand,	*Sansal*,	1864.
Marquise de Castellane,	*Pernet*,	1869.
Mme. Georges Schwartz,	*Schwartz*,	1871.
Mme. Nachury,	*Damaizin*,	1873.
Comtesse C. de Chabrillant,	*Marest*,	1859.

ROSE-SALMON.

Marie Finger,		1874.
Mlle. Eugénie Verdier,	*Guillot, fils*,	1869.

ROSE.

Victor Verdier,	*Lacharme*,	1859.
Mme. G. Luizet,	*Liabaud*,	1877.
Magna Charta,	*W. Paul & Son*,	1877.
Marchioness of Exeter,	*Laxton — Paul & Son*,	1877.
Édouard Morren,	*Granger*,	1868.
Dupuy Jamain,	*Jamain*,	1868.
Mme. Thérèse Levet,	*Levet*,	1866.

LIGHT CARMINE RED.

Étienne Levet,	*Levet*,	1871.

RED.

Alfred Colomb,	*Lacharme*,	1865.
Charles Lefebvre,	*Lacharme*,	1861.
Marie Beauman,	*Beauman*,	1863.
Mme. V. Verdier,	*E. Verdier*,	1863.
Horace Vernet,	*Guillot, fils*,	1866.
Dr. Andry,	*E. Verdier*,	1864.
Exposition de Brie,	*Granger*,	1865.
Mons. E. Y. Teas,	*E. Verdier, fils*,	1874.
Comtesse d'Oxford,	*Guillot, père*,	1869.
Mrs. Laxton,	*Laxton — Paul & Son*,	1878.
Duchesse de Caylus,	*C. Verdier*,	1864.
Sir Garnet Wolseley,	*Cranston*,	1875.

Sénateur Vaïsse,	*Guilliot, père*,	1859.
Duke of Edinburgh,	*Paul & Son*,	1868.
Ferdinand de Lesseps,	*E. Verdier*,	1869.
President Thiers,	*Lacharme*,	1871.
Richard Wallace,	*Leveque*,	1871.
Thomas Mills,	*E. Verdier*,	1873.

CRIMSON.

Louis Van Houtte,	*Lacharme*,	1869.
Mons. Boncenne,	*Liabaud*,	1864.
Abel Carrière,	*E. Verdier*,	1875.
Xavier Olibo,	*Lacharme*,	1864.
La Rosière,	*Damaizin*,	1874.
Pierre Notting,	*Portemer*,	1863.
Fisher Holmes,	*E. Verdier*,	1865.
Prince Camille de Rohan,	*E. Verdier*,	1861.
Olivier Delhomme,	*V. Verdier*,	1861.

WILLIAM GRAY, Jr.,
Chairman.

No subject having been assigned for discussion, that of last week, "Vegetables and their Culture," was again taken up.

Aaron D. Capen expressed surprise that the plan of planting potatoes whole should have found an advocate on the previous Saturday. He had for many years rejected the seed end for planting and never failed of success. It has many small, weak eyes, which produce shoots corresponding in number and character. He agreed with a speaker at the last meeting, that the best potatoes for exhibition are found in hills having but a single stalk, showing the advantages of light seeding. He prepares pieces with but a single eye on each.

John S. Martin had planted potatoes in all ways—large and small, whole and cut, and had never found any difference.

J. W. Talbot said that a neighbor of his received a letter offering to send directions for increasing the crop of potatoes twenty per cent., for one dollar, to be paid in case the plan proved successful. The method was to take a well ripened potato of any size, and cut out all the eyes but two, and let the cut surfaces dry a week or two before planting. It proved so successful that his friend sent the dollar. Mr. Talbot thought this much better than

high seeding, and thought also that experience had shown very little difference in the results on the crop between using for seed the eyes from either end.

Mr. Martin said that he had been advised by an old cultivator to place the cut side up in planting potatoes.

Mr. Capen said that in planting potatoes he puts the cut side uppermost. He spoke of a cultivator who soaked cut potatoes in a solution of Paris green, and strewed them between the rows of planted potatoes before the latter were up, as turnip growers in England strew poor turnip seed in trenches. The potato beetles ate the poisoned potatoes, and thus many were destroyed which would otherwise have preyed on the crop.

Hon. Marshall P. Wilder concurred with Mr. Talbot and Mr. Capen in regard to the advantage of avoiding high seeding. The same principle applies to squashes and melons, or fruit trees, none of which can produce the best results when crowded. His system of planting potatoes is to place one or two strong eyes in a hill.

Mr. Capen said that he prefers to plant in drills, and places the potatoes about a foot apart in the drills. He ploughs from the plants, and then has only a narrow space left to hoe. He cultivates at intervals of one or two weeks in opposite ways. To secure the best crop of squashes he planted the pure Marrow as far as possible from the hybrids, and every year added a little of the pure Marrow seed to the seed from hybrids; by so doing he thought the crop was more than doubled. He plants squash, melon, and cucumber seeds in drills, as we plant peas, putting in a supply for the bugs as well as for the crop. After the plants have grown sufficiently to allow it, they are thinned so that each one left has a better supply of food than by the usual way of planting in hills.

Mr. Wilder said that the first cross in plants is like that in animals, stronger than the parents. He does not believe that hybridizing affects the fruits of squashes, melons, etc., the first year.

Alfred W. Paul said that he practised cutting his potatoes to a single eye for seed. In the Early Rose, what appears to be a single eye is really a cluster of eyes, of which only one usually grows. He plants in drills and gets more and better potatoes for market at fifteen inches apart than at a foot. In one experiment he did not get as large a yield at fifteen inches apart in the row, as at four feet apart, the land being in a high state of cultivation.

Mr. Wilder inquired of Mr. Paul what quantity of strawberries was raised in Dighton, where he resides.

Mr. Paul replied that he had tried to get correct and full information on this point. More strawberries are grown in Dighton than in any town east of the Hudson River. They are mostly Wilsons. In 1877 there were 772,600 quarts produced in the town. In 1878 and 1879 the crops were small, owing to the blight and the depredations of the larvæ of the May beetle. Last year about a million quarts were produced. This was about two-thirds what the crop would have been, but for the drought, which was, with one exception, the severest known during the strawberry season for fifteen or sixteen years. The largest well authenticated crops that he has known of have been raised in Dighton. The best crop he had known was four years ago on an acre and three-quarters of land (half being an old bed, which does not produce as well as a new), that yielded 17,000 quarts. Another half-acre yielded 6,400 quarts. He thought that the average of old and new beds — some being three years old — was about 5,000 quarts per acre for the year 1877. The business did pay, but is now overdone, and the quantity raised will be reduced rather than increased. The larvæ of the May beetle injure strawberry plants more in sod land the first year after it has been broken up, than after it has been cultivated in hoed crops one or two years, and the plants should therefore be set only after the sod is rotted. The Wilson has deteriorated within a few years, and is subject to a blight on both fruit and plant, which destroys it—in some cases, in a few days. None of the new varieties are so productive as the Crescent, but it is smaller and softer than the Wilson, and not of as good quality. The Sharpless has not been tested sufficiently. The Charles Downing is cultivated more largely than any other variety except the Wilson, and if firmer would supplant that variety. The Turner's Beauty, from Southern New Jersey, has failed two years out of five, but the other three years it was equal in productiveness, and superior in quality, to any kind he has tested. Last year the strawberries averaged eight cents per quart at wholesale, out of which the grower had to pay the cost of growing and picking, freight, commission, and rent of land.

Few raspberries are cultivated at Dighton, but Mr. Paul thought that a hardy variety would be profitable. The Turner is most

promising, but is not exactly what is wanted. It is as hardy as a burr oak, but the berries are only of medium size and are soft. It suckers very badly. The Brandywine kills out, and even when the canes were laid down they did not survive, but appeared to be smothered. Some winters are very different from others in their effect on plants. Winter before last some of the strawberry plants appeared to be smothered, but during the winter now closing the ground has been frozen continuously, and the prospect is better.

Mr. Wilder thought two men could lay down and cover an acre of raspberries in a day. He would not cultivate either the Philadelphia or the Brandywine, because they sucker so immensely. He commended the Caroline as quite hardy. It is a hybrid between Brinckle's Orange and the Catawissa, of orange color, and unless fully ripe has a pretty sharp acid. It roots somewhat from the tips like the Black Caps. No white cherry, currant, or raspberry will bring as much in the market as red ones.

Mr. Paul said he had attempted to raise currants; he had planted nearly all Versaillaise, but some Cherry, and had found no difference between the two. One currant bush would bear a good crop; the next a moderate crop, and a third none at all—which he could not account for. He had found a borer very troublesome in his currant bushes.

The Chairman had found the same trouble in regard to the productiveness of currant bushes as Mr. Paul. He intended in raising new plants to take cuttings only from the most prolific.

Mr. Wilder said that the course proposed by the Chairman would give a stock of productive bushes. He introduced the Versaillaise currant from France many years ago; there was a great demand for the plants, and they got mixed with the Cherry currant, but they are distinct, and the Versaillaise is best.

John Fillebrown said that he knew an instance of a man's planting a peck of Hill's Early peas, from the produce of which he sold fifty dollars' worth. At Arlington, where he carries on the business of market gardening, they have to irrigate in order to get good crops of vegetables. Melons are a very uncertain crop; the year before last he had a fine piece, but at a critical time there came two or three days of rain, and he never picked a melon from it. He had not tried any remedy for lice on melons; when they come they eat so fast that it would be useless to try to pre-

vent it. The only thing to be done for the maggot or borer is to cut it out. A small or moderate crop is more profitable than a large one.

Mr. Martin, in answer to an inquiry from Mr. Wilder, named the Surprise, Casaba, and Bay View melons as superior to any others. He had had no trouble with his melons from the weather.

Mr. Wilder said that the Boston greenflesh melons are renowned for their excellence. He could not grow the finest kinds in perfection, and was obliged to rely on such as would in a measure take care of themselves. The Christiana, originated by the late Captain Josiah Lovett, is the hardiest. The Casaba grows very strongly, and the fruit is large and almost as good as the greenfleshed kinds. The Bay View is good and easily grown; it is much like the Casaba. For earliest he cultivates the Japan White; it is small but very delicious. It is not so easily grown as the other kinds named. The Golden Orange is next in earliness to the Japan White, and quite as good. He saves seed from the best specimens, and perpetuates the different varieties without much crossing.

He has used specific manures from the time when guano was introduced, and takes great care in mixing them. He made a strong compost for melons, and ploughed in and also put it in the hills. It consisted of two cords of loam, one hundred pounds of guano, and half a cord of manure. His foreman told him he would destroy all his melons with it, but he put a few quarts in each hill and never had such a crop of melons.

John C. Newton, being called on, said that his experience in horticulture had been confined mainly to the cultivation of pears. For two years he had been troubled with pear blight, which had destroyed his best trees. He asked whether it was not induced by too high culture.

Mr. Wilder said that he never saw a pear tree over-manured, though the late Samuel G. Perkins ascribed the death of a large Seckel tree to plethora, by manuring.

Rev. F. L. Capen had seen pear trees killed by the application of excessive quantities of green manure.

Mr. Newton said that he would not put green manure to a pear tree, but would compost it with loam and let it lay from twelve to eighteen months, and turn it over three or four times.

Mr. Fillebrown thought there was no such thing as over-

manuring. In the market gardens at Arlington large quantities of fresh manure are used. At Philadelphia, in the month of December, he was surprised to see the large quantities of night soil applied to the ground. He thought it a very coarse way of raising vegetables, and was astonished to see the vegetables grown by it.

James Fisher spoke of a novel way of raising potatoes, which he saw in Illinois. The ground is subject to drought, and is ploughed and harrowed perfectly smooth, and the potatoes are then placed on it and covered with from fifteen to twenty inches of straw or strawy manure, which protects them from drought, and they grow up through it. Seventy miles from Chicago he saw the ground covered with two feet of straw to smother Canada thistles.

Mr. Wilder said that twitch grass could be destroyed in the same way, or by planting the ground with cabbages, which, when grown, afford such a perfect shade as to destroy everything beneath them.

Rev. Mr. Capen had seen potatoes grown in Florida in a trench filled with thatch. The thatch was removed from time to time, and such of the potatoes as were large enough were picked out, and the thatch was then replaced for more to grow.

Mr. Fillebrown thought that the ashes of a cord of manure would be worth as much as the manure. He mentioned an instance where coarse strawy manure was applied for a crop of beets on a hot day in July, when the manure dried so as to have a burnt appearance, but no difference could be told between the crop there and that fertilized with manure in the usual condition.

BUSINESS MEETING.

SATURDAY, March 26, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, Vice-President John B. Moore, in the chair. No business being brought before the meeting, it was dissolved.

MEETING FOR DISCUSSION.

The report of the Committee appointed on the 5th of March to prepare a list of the best Deciduous Trees and Shrubs, and the best Conifers, was read by the Secretary.

Report.

The Committee, to whom was referred a selection of the best twenty Deciduous Trees and Shrubs, as also twenty of the most desirable Evergreens, beg leave respectfully to report as follows:

In the absence of all instruction as to whether the selection was intended for the purpose of planting places of some magnitude, or to be confined to what seems to be the future character of suburban homes,—a comparatively small number of acres, — your Committee, or rather a portion of them, have made the latter selection, choosing trees and plants of a secondary size, rather than those they might have recommended for the adornment of large estates, where much space would have been required.

The Committee likewise wish to say that these three selections were made by three members of the Committee of five (two declining to serve), without any consultation with each other, it being thought that by this course, the public would receive their individual opinions and experience without any bias or influence from mutual discussion or comparison.

HENRY WINTHROP SARGENT, *Chairman.*

The first list, which was selected by the Chairman of the Committee, and is intended for places of moderate or small extent, is as follows:

Deciduous Trees.

Weeping Beech.
Fern Leaved Beech.
Purple Beech.
Cut Leaved Weeping Birch.
Young's Weeping Birch.
Upright Pyramidal Birch.
Purple Leaved Birch.
Weeping Larch.
Weeping Silver Linden.
Imperial Cut Leaved Alder.
Golden Oak.
Golden Catalpa.
Golden Locust.
Variegated Maple.

Weeping Cypress.
Weeping Bird Cherry.
Variegated Dogwood.
Virgilia (Yellow-Wood).
Magnolia cordata.
Magnolia Soulangeana.
" conspicua.
" glauca longifolia.
" Lennei.
Camperdown Weeping Elm.

Shrubs.

Dwarf Horse Chestnut.
Oak Leaved Hydrangea.
Hydrangea paniculata grandiflora.
Viburnum plicatum.
Berberis Bealii.
" Japonica.
Scarlet Dogwood.
New Weeping Scarlet Thorn.
New Double White Thorn.
New Double Scarlet Thorn.
Paul's Crimson Thorn.
Kœlreuteria paniculata.
Judas tree.
Malus floribunda.
Fern Leaved Sumach.
Golden Elder.
Weeping Sophora.
Azalea mollis.
Rhododendrons.
Japanese Maples.

Evergreens.

Abies orientalis (Oriental Spruce).
" Canadensis (Hemlock Spruce).
Weeping Hemlock.
Picea pungens (Blue Spruce).
Victoria Spruce.
Weeping Norway Spruce.
Golden Yew.
Golden Upright Yew.
Waterer's Seedling Yew.
Young's Golden Juniper.
George Peabody Arbor Vitæ.
Vervaene's Arbor Vitæ.
Semper Aurea Arbor Vitæ.
The Retinosporas.
Cephalotaxus Fortunei.
" drupacea.
American Holly.
Maxwell's argentea Holly.
Thuiopsis dolabrata.
" borealis.
Pinus Cembra.

The next list, by H. H. Hunnewell, is intended for a much more extensive place than the above.

Deciduous Trees.

Elm, American.
" English.
Oak, White.
" Scarlet.

Maple, Sugar.
" Norway.
" Scarlet.
" Japanese atropurpureum.
Other Japanese Maples.
Beech, American.
" Copper.
" Weeping.
Cut Leaved Weeping Birch.
Tulip tree.
Magnolia acuminata.
Magnolia Lennei.
Linden, European.
" American.
Virgilia lutea (Yellow-wood).
Salisburia (Gingko).
Dogwood.
Catalpa.
Flowering Cherry.
Common Chestnut.
Liquidamber.
Weeping Willow.

CONIFEROUS TREES.

Abies alba (White Spruce).
" Canadensis (Hemlock Spruce).
" excelsa(Norway Spruce)
" orientalis (Oriental Spruce).
" Menziesii.
" Alcoquiana.
" polita.
" Douglasii.
Picea Nordmanniana (Nordmann's Fir).
" Cephalonica.
Pinus Pichta.
" Lambertiana.
" Pyrenaica.
" excelsa.
" Strobus (White Pine).
" Cembra.
" sylvestris.
Sciadopitys verticillata.
Larix Americana.
" Europæa.
Retinospora obtusa.
" plumosa aurea.
" filifera.

The following list was selected by William C. Strong:

DECIDUOUS TREES.

Acacia, Three Thorned.
Beech, American.
" Purple.
" Weeping.
Birch, Cut Leaved Weeping.
Cherry, Myrtle Leaved Weeping.
Elm, American.
" Camperdown Weeping.
Gingko (Salisburia).
Maple, Norway.
" Reitenbach's purple.
" Scarlet.
" Schweidler's.
" Sugar.
" Wier's Weeping.
Magnolia acuminata.

Sophora Japonica.
Tulip tree.
Virgilia, or Yellow-Wood.
Walnut, Black.

Shrubs.

Almond, Double White.
Azaleas, Ghent.
Clethra alnifolia.
Cornus sanguinea.
Cydonia Japonica.
Deutzia crenata flore pleno.
Exochorda grandiflora.
Forsythia viridissima.
Fringe tree, White.
Hydrangea paniculata grandiflora.
Hawthorn, Scarlet.
Kalmia latifolia.
Magnolia glauca.
Prunus triloba.
Rhododendrons.
Roses.
Spiræa ariæfolia.
" prunifolia.
" Thunbergii.
Syringa Josikæa.
Viburnum plicatum.

Evergreen Trees.

Arbor Vitæ, Booth's.
" George Peabody.
" Hovey's Golden.
" Pyramidal.
" Vervaene's.
" Siberian.
Fir, Engelmann's.
" Nordmann's.
Pine, Austrian.
" Swiss Stone.
Pine, White.
Retinospora filifera.
" plumosa.
" plumosa aurea.
" squarrosa Veitchii.
Spruce, Hemlock.
" Norway.
" Norway Weeping.
" Oriental.
" White.

Discussion.

Hon. Marshall P. Wilder thought such lists as the above, from gentlemen so experienced in the cultivation of ornamental trees and shrubs, were great acquisitions.

William C. Strong said that, though the lists were made by different individuals, it was remarkable how closely the last two ran together. He felt a good deal of difficulty in making his selection, because a list which would be exactly what one person would want, might be entirely unfitted for another. Many trees which are extremely desirable, are entirely omitted; the ailanthus, which, for some purposes, produces an effect that no other tree

gives, is not mentioned. A bare list may be misleading; one half may be just what a planter wants, and the other half may be what he does not want. The problem before the Committee differed from making a selection of roses or pears, and was much more difficult, because the character and habits of the trees are so different.

Benjamin G. Smith said that the three gentlemen who had reported were very familiar with the subject; and he thought Mr. Sargent's list well adapted to small places, and those of Mr. Hunnewell and Mr. Strong, to large places.

Mr. Wilder said that Mr. Strong was so conscientious and so desirous to give a list which all could understand without study, that he found it difficult to satisfy himself, but any one who has any idea of rural adornment, can select from these lists. In regard to some trees, such as the purple beech, cut leaved weeping birch, and virgilia, they are unanimous.

Mr. Strong hoped that the circumstances under which each tree does best would be added to the report of the Committee, and that the trees best adapted to particular localities would be mentioned.

Leander Wetherell thought that the greatest error in planting trees was the disregard of their adaptation to the soil. The sugar maple should never be planted in gravelly or sandy soils, nor should the elm. Emerson says that regard should also be had to the ripening of the leaves, beginning with the sumach and scarlet maple, which are earliest, and ending with the brown oak leaves, so as to produce the finest effect in autumn.

Mr. Strong said that the adaptation of a tree to the soil in which it is to be planted, is a point not understood by the public. All agree that the magnolias are very desirable, yet they are utterly unfit for dry soils; but this fact does not appear on the list.

Mr. Smith asked whether elms do not grow on dry soils.

Charles M. Hovey said that Cambridge is famous for dry soils, yet it is also noted for fine elms, such as the Washington elm, and the two elms at the "gates of Arlington," on a sandy knoll. There is another near the Botanic Garden. His own ground is partly moist, but he has no such elms in the moist as in the dryer parts.

Mr. Smith said it was well known that Cambridge Common,

near which the Washington elm grows, is sandy. He had seen excavations there eight or ten feet deep, showing only sand.

Alexander Dickinson considered the elm the toughest of all trees. It will grow where anything else will grow, even where the tide flows. About thirty years ago, he planted an elm near his soap works, in Cambridgeport, where the tide frequently flows and the soil is chiefly marsh mud, and it has thriven and grown well. He had seen magnificent elms at Goffstown, and also at Manchester, N. H., in sandy soil.

The Chairman said that elms grow at Concord on sand banks; they make long rambling roots.

Mr. Wilder said it is true that elm roots run wide and deep. One of the Paddock elms, on the opposite side of the street, sent its roots into the burying ground and entwined them around the skull of James Otis. Roots run deeper than is generally supposed; in ground prepared for a dahlia bed, he had had strawberry roots run down three feet.

Rev. A. B. Muzzey said that he was jealous of the reputation of Cambridge, and that a portion of the soil is clay, even in the highest parts, while in other elevated places the soil is sandy. Some of the soil is probably drift from the North Pole, which was partly clay, and was carried into certain parts of Cambridge, so that the soil changes entirely within a very short distance. He believed that there is clay within reach of the roots of the elm trees which have been mentioned as growing on sandy soil, and that those who have referred to them, and those who believe the elm does best in moist soils, are both right.

E. H. Hitchings said that the largest elm he knows, which is twenty-eight feet in circumference, is in a sandy soil.

Mr. Wetherell mentioned an avenue of elms at Hatfield, in a mixture of sand and clay. He was still of the opinion that the elm prefers a moist soil, and quoted from "Gray's Manual" the statement that it is found in "moist woods, especially along rivers, in rich soil."

Mr. Hitchings said, while disclaiming any intention to detract from the authority of so eminent a botanist as Dr. Gray, that the concise statements of his "Manual" cannot always be taken as covering all the facts in regard to a tree or plant. Dr. Gray says, that the *Habenaria blephariglottis* and *H. ciliaris* are found in moist soils, and it is true that they generally are, but the speaker had

frequently found them also in dry places. So the elm may be found in sandy as well as clayey soils.

The Chairman said that there are many large elms in Concord; some are twenty feet in circumference, with no soil to be seen about them. There is one in front of the town house. They have no difficulty in growing in sandy soil. On ploughed land near the river, some of the roots run near the surface. He had seen a root six rods from the tree, as large as his wrist, and so strong that two yoke of oxen could not break it. The roots are very tough. He has large elms near his house, and the bottom of the cellar is full of the roots. The bottom of his well is also full, and they stop up drains.

Mr. Wetherell remarked that the roots of maples in Hardwick had stopped up the drains on the Common.

O. B. Hadwen said that he was much interested in the report of the Committee, though his farm was not large enough, nor his purse long enough, to plant all the trees recommended by them. Each one should study the habits of trees, and plant those best adapted to his situation. No roots penetrate the soil deeper, or hold on with more tenacity, than those of the elm. There are others than the elm, which are not adapted to all situations. As a member of the Committee on Shade Trees in the city of Worcester, he had found that the rock, or sugar maple will not thrive in either sandy or clayey soils. The Norway maple often succeeds where the sugar maple fails, and will live and thrive in the streets. There was hardly a tree on the three lists reported by the Committee but he liked, and any one could choose from them. He spoke of the beauty of the purple beech, and alluded to a fine specimen on Mr. Wilder's lawn. Many years ago, he visited William Kenrick's nurseries, with the late William Lincoln, where they saw a purple beech for the first time, and when Mr. Lincoln was told what it was, he said that he had heard of a thing being knocked into the middle of next week, but this knocked him into the middle of next autumn.

It was voted that the lists be accepted and referred to the Committee on Publication.

The Chairman here announced that the List of Roses reported on the 19th instant, by the Committee appointed for that purpose, was printed, and ready for distribution to the members. He

added that, as a member of the Committee, he was of the opinion that one most important thing had been omitted, viz.: a list of ten or twelve of the most promising new roses. Among these is the Mabel Morrison, which he thought the best of all the white roses—a class in which first rate kinds are deficient.

Mr. Strong thought the list valuable and serviceable, but also misleading. La France is a splendid rose, but good for nothing for general cultivation.

Mr. Wilder said that, in France, La France received a greater number of votes than any other rose.

The Chairman and Mr. Strong both thought it worthless for general cultivation, out-doors or in.

Mr. Hovey thought that if the Committee had described the list as comprising the best roses for exhibition purposes, no exception could have been taken to it. The Baroness Rothschild is in the same case with La France; Captain Christy is wholly tender; Madame Eugénie Verdier is tender.

The Chairman said that two years ago, he began to examine roses critically, to see which were best, judging by points, and was surprised to find so many of high repute ranking low. Paul Neron, our largest rose, has no fragrance, and marks low on that point.

E. W. Wood thought the Society could do no better work than to publish select lists, especially of fruits. This list of roses represents large growers. He would like to have the best one, and the best twelve designated.

The Chairman said that the best one under each color was placed first, as white, Mlle. Bonnaire; blush, Baroness Rothschild; pink, John Hopper; rose salmon, Marie Finger; rose, Victor Verdier; light carmine red, Etienne Levet; red, Alfred Colomb; crimson, Louis Van Houtte.

Mr. Hovey objected that the colors were not described with sufficient exactness; one rose might be of a silvery hue, and another of a dark shade of the same color; one might be of an opaque and another of a translucent crimson.

Mr. Wood said that many persons plant roses in prominent places, and that those which bloom only in June are not things of beauty after that time. The Committee could select kinds which would bloom from June until frost, and he would like to have the names of a dozen such. In his observation, the Mme. Alfred

Rougemont is the most continuous bloomer of all. It is perfectly hardy, though not vigorous, and very useful for bouquets. The color is white, tinged with pink.

Mr. Wilder recommended the white Mme. Plantier rose. It is not perpetual.

The Chairman said that the subject of color was talked over in the Committee for an hour, and it was found impossible to designate all shades. Every one is not as well informed as Mr. Hovey, in regard to colors. As to the objection made by a previous speaker, to Baroness Rothschild, that it is too large for bouquets, the Chairman said that it is not necessary to put it into bouquets. A single flower in a vase is as beautiful as a bouquet, without the help of the florist. The Committee were all prominent rose growers, not second to any in the Society, and gave their best judgment to making up the list, but the speaker was of the opinion that some of the new roses would soon supersede some of the kinds on the list.

Mr. Hovey thought the list was an excellent one, but he was speaking for amateurs, who want to cut flowers for their friends, and instead of one great flower of Baroness Rothschild, would rather have ten smaller ones.

Mr. Wilder said that if one-half the varieties on the list prove as desirable as we know they will, we have got some valuable information.

The Chairman thought there were not ten varieties on the list that were not desirable for general cultivation. La France and Baronne Maynard, are both tender, and so are all the white Hybrid Perpetuals. If roses are wanted to peg down in beds, those with withy shoots should be selected.

Mr. Wood asked if we could not select twelve or eighteen perpetual bloomers from the list.

The Chairman replied that we could; many of them are more constant bloomers than others.

Mr. Strong said that while all think the list a valuable one, it must be taken with exceptions; but the public will take it just as it is. It would be better to publish it with comments, and the same with the lists of trees and shrubs; otherwise the public will be misled. There are many roses not on it, that are more valuable than those recommended, such as Gen. Jacqueminot and Triomphe d'Angers.

The Chairman said that if we could strike out half a dozen varieties from the list, it would be a safe one, though there are many on it that he would not plant, but would prefer new varieties.

Mr. Hovey said that if a customer should order twelve plants of La France, he could not recommend them, and it would be unpleasant for him to differ from the Society. Mme. Nachury is only seen at Mr. Gray's. Jules Margottin and La Reine are well established kinds, with which no fault can be found. De la Grifferaie is an old rose, of which the speaker has a plant that bears three thousand flowers. Such roses are like rhododendrons, which are valuable for their masses of bloom. Col. Wilder would not recommend a pear after only two years trial, and roses, also, require time to test their value.

Mr. Smith said that he found no difficulty in growing La France, by laying it down and covering with leaves. If we can grow a very beautiful thing with a little extra attention, we had better give it that.

Mr. Wilder said that the agapanthus and the hydrangea may be grown in the open ground by being thoroughly protected with leaves or straw during the winter.

The Chairman said that if any one expected to let Hybrid Perpetual roses run wild, like blueberry bushes, and get good flowers, he would be disappointed. In all our discussions of roses, it has been taken for granted that they would have good culture. They must have it.

Mr. Wood said that he did not question the judgment of the Committee, but he would like, first, a list of twelve roses best adapted for general cultivation; second, a list of twelve continual bloomers; and, third, a list of the twelve most promising new roses. The present list is valuable, but gives no information as to the continuous blooming of the varieties named.

The Chairman said there were not more than seven or eight roses on the list that could possibly prove a failure on the ground of tenderness. As to the first two, all white Hybrid Perpetuals are more tender than the colored. No rose is first class in all respects. Baroness Rothschild is slightly tender, but he earths it up and has no trouble. La France is the most tender variety on the list, but he grows and winters it. Xavier Olibo is of the most beautiful color, but not a good grower. Growth was one of the points considered by the Committee. Louis Van Houtte, in dry,

sheltered places, is all right, but in a wet place is bad. La France might be the same. He did not agree wholly with the report, but could not expect to have his own way all the time. The Committee went through the whole list of roses, and when a name was called, each member marked independently of the others, and the markings were then compared. The Committee of five were unanimous with regard to twenty or twenty-five out of the forty-eight varieties recommended, and the others had four or three votes. It does not take so long a time to test roses as pears; their value can be judged of in three or four years.

Mr. Wetherell moved that the list be recommitted with instructions to indicate the freest bloomers, and those most desirable for bedding; and to add a list of the most promising new roses, and this motion was carried.

A vote of thanks to the Chairman and members of the Committee on Publication and Discussion, for the faithful manner in which they had discharged their duties, was unanimously passed.

The meeting was then dissolved.

CONTENTS.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1881.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY.
1882.

The Committee on Publication and Discussion, take this opportunity to repeat what they have heretofore stated,—that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature in the papers and discussions now or before published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly. The award of a prize or gratuity for an Essay is not to be understood as implying that the Committee approve it in every particular, but only that they believe it calculated, *on the whole*, to promote the science or art of Horticulture.

BENJAMIN G. SMITH, *Chairman.*

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 2, 1881.

A duly notified stated meeting was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

Hon. Marshall P. Wilder presented to the Society six copies of the Proceedings at the Session in 1879 of the American Pomological Society, of which he is President. The thanks of the Society were voted to Mr. Wilder therefor.

The following appropriations, having been approved by the Executive Committee, were unanimously voted: —

For Prizes for the year 1881, ...	$3,050
For the Library Committee, for the purchase of magazines and newspapers, binding of books, and incidental expenses of the Committee, .	200
For the Committee on Publication and Discussion, ...	150
For the expenses of the Committee of Arrangements, ...	250

The amendment to the Constitution and By-Laws, proposed at the stated meeting of the Society on the 1st of January, and then ordered to be entered on the records, came up for final action, and, after being again read by the President, was unanimously adopted, as follows: —

Voted, That the thirteenth and sixteenth sections of the Constitution and By-Laws of this Society be amended by striking out in

the thirteenth section the words, "He shall also act as Superintendent of the Building, subject to the orders of the Finance Committee, and shall attend to the care and letting of the same, and the collection of rents, and other income of the Society." And, also, in the same section, strike out the words, "He shall also act as Librarian under the direction of the Library Committee." And strike out in the sixteenth section, after the word "appoint," in the sixth line of the printed copy of the By-Laws, the words, "A Treasurer and a Secretary of the Society," and insert, after the words in the seventh and eighth lines of said copy, "Whenever a vacancy shall occur," the words, "A Treasurer, a Secretary, a Superintendent of the Building, and a Librarian of the Society, and define their respective duties, except when these are determined by the By-Laws."

Adjourned to Saturday, May 7.

BUSINESS MEETING.

Saturday, May 7, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

Hon. Marshall P. Wilder, Chairman of the Committee appointed at the meeting on the 5th of March to prepare resolutions in memory of George B. Emerson, LL.D., Hon. John C. Gray, Henry Vandine, and E. F. Washburn, reported as follows:—

Resolved, That in the decease of George B. Emerson, LL.D, there has been removed from our circle one who has been an active promoter of educational development, and a devoted friend of horticultural art. Engaged during his whole life in the great work of public education, he still found hours of leisure to practically illustrate the pursuit he loved so well, and which he considered of such importance to the development of the industry and the greatest interests of our State.

Resolved, That in his labors as one of the Commissioners for an Agricultural Survey of the State, and in his elaborate Report on the Trees and Shrubs of Massachusetts, we recognize the intelli-

gence, ability, energy, and fidelity with which he discharged his duties; and the revision of that Report, which was one of his latest works, is an honor to us and to the State which he so well served. To him are we also indebted for the advice which led to the foundation of the Arnold Arboretum.

Resolved, That as an educator and instructor, a representative of liberal ideas, an honored citizen, a kind friend, and a sincere and Christian man, his death is a public loss. Our consolation is that he had reached that ripe age when all must cease from earthly cares and toils, and where few could look back on a life better spent for the welfare of their fellow men.

Resolved, That in the removal by death of the Hon. John C. Gray, the last survivor of the first board of Vice-Presidents of this Society, we have to mourn the loss of one who, in its early history, contributed largely by his influence and addresses to its advancement and popularity.

Resolved, That we hold in grateful remembrance his valuable services in the cause of terraculture, not only in this Society, but as President of the Massachusetts Society for Promoting Agriculture, and also for his other official services in connection with the progress and prosperity of the institutions of this city.

We have also to record the decease of Henry Vandine, of Cambridgeport, one of the oldest of our members. Mr. Vandine, who joined the Society in 1845, was fond of rural life, and was a successful cultivator of fruits, especially the plum and pear, as may be seen in the reports of the Society. Of the plum he made contributions when others were unable, from lack of skill or of perseverance, to do so. As a man, Mr. Vandine was singularly modest and unassuming in his manners, gentle in his disposition, and benevolent in his desires for the advancement and welfare of mankind, having in his will made special bequests for that purpose.

Resolved, That it is with the deepest regret that we have heard of the decease of our friend and fellow member, E. Fred Washburn.

He served the Society long and well on many of its most important Committees, of one of which, that on Plants and Flowers, he was a member for ten years, and all who were associated with him will ever remember his cheerful countenance, kind words, and amiable disposition.

Resolved, That these proceedings be entered on the records of the Society, and that copies of the same be forwarded to the respective relatives of the deceased.

MARSHALL P. WILDER,
CHARLES M. HOVEY,
WILLIAM C. STRONG,
JOHN C. HOVEY,
} *Committee.*

President Hayes said that he was well acquainted with Mr. Emerson, having been early attracted to him by his courteous and benevolent manners and his interest in horticulture. He spoke of the pleasure which he had in a visit from Mr. Emerson to his grounds at Lexington, and of the careful observations and valuable suggestions which Mr. Emerson made. He was particularly interested in the oaks and maples, as well as in native shrubs. He did not lose his interest in planting with age, but after he was eighty years old he planted ten thousand trees, and exchanged new and rare trees with President Hayes. He not only took pleasure himself in planting, but in looking forward to the enjoyment by others of the results of his labors.

Hon. Marshall P. Wilder also spoke of Mr. Emerson's deep interest in trees and shrubs, and said that his first report on the trees and shrubs of Massachusetts was a most remarkable volume, prepared with great practical knowledge of the subject. Soon after the establishment of the State Board of Agriculture he was appointed Chairman of a Committee — of which Charles L. Flint, Secretary of the Board, and the speaker were the other members — to prepare a book on agriculture for common schools. He was the founder, in one sense, of the Arboretum connected with Harvard College, having been a trustee of Mr. Arnold's bequest to promote the culture of trees and shrubs in such manner as he thought best. His interest in this subject pervaded his whole life.

The report was accepted and the resolutions were unanimously passed.

The Secretary announced the decease of Hon. Andrews Breed, of Lancaster, one of the founders of the Society, and Robert Manning. Marshall P. Wilder, and John G. Barker were appointed by the Chair a Committee to prepare memorial resolutions.

The following named persons, having been recommended by the

Executive Committee, were, on ballot, duly elected members of the Society:

J. C. Vaughan, of Chicago, Ill.
Charles L. Fowle, of Dorchester.
Peter D. Smith, of Andover.
Charles Storer, of Natick.
William P. Gould, of Jamaica Plain.
George W. Fowle, of Jamaica Plain.

Adjourned to Saturday, June 4.

BUSINESS MEETING.

Saturday, June 4, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

Robert Manning, Chairman of the Committee appointed at the last meeting to prepare resolutions in memory of Hon. Andrews Breed, reported the following:—

The Massachusetts Horticultural Society have learned with deep regret of the decease of the Hon. Andrews Breed, one of the Founders of the Society, therefore

Resolved, That we would place on record our appreciation of the services of one of those who, more than fifty-two years ago, were present at the first meeting held to form a horticultural society,—one who has watched its growth from that small beginning until it has become an important and beneficent institution, and whose interest in its work continued through his active business career and the retirement of his later years, and ceased only with his life.

We would remember his labors for the promotion of horticulture in his native city of Lynn, not only in his own garden, but for the public benefit, on the Common, where the people walk under the trees which he took from the forest with his own hands and planted there. We would pay our tribute to his industry, perseverance, economy, integrity, and business enterprise; to his public spirit, his Christian virtues, and his untiring zeal in all that tended to promote the welfare of the community. He was a tried and true

friend, and his kindness and courtesy were displayed to all with whom he came in contact. His fellow citizens testified their esteem for him, and their confidence in him, by electing him chief magistrate of their city, and by frequently calling him to positions of trust.

Resolved, That while we mourn the loss of a good man, we are consoled by the thought that his death was not untimely, but that he lived to a good old age to benefit his fellow men, and rejoiced many years in the prosperity of this Society, which he helped to establish, and that he has left two generations of descendants who inherit his love for horticulture, and practise the art which it is the object of this Society to promote.

Resolved, That these resolutions be entered on our records, and that a copy be transmitted to the family of Mr. Breed.

ROBERT MANNING,
MARSHALL P. WILDER,
JOHN G. BARKER,
} *Committee.*

After remarks by Hon. Marshall P. Wilder the resolutions were unanimously passed.

Mr. Wilder presented the following letter from the family of George B. Emerson, LL.D., which was read by the Secretary: —

GENTLEMEN,—

Mr. Lowell and I are very much gratified by the appreciative and thoughtful notice of my dear father at the late meeting of the Massachusetts Horticultural Society, and thank you for your kindness in drawing up and sending to us the resolutions, which give us a great deal of pleasure and consolation. My father found so much of the happiness of his very happy life in the study of the works of God, especially in plants, flowers, and trees, that it is very delightful to me to be assured that his services were appreciated by a society like yours, in which he was always so deeply interested.

With respectful thanks to you all, I am

Very sincerely yours,

LUCY B. LOWELL.

To Hon. Marshall P. Wilder.
Charles M. Hovey.
William C. Strong.
John C. Hovey.

CHESTNUT HILL, May 13, 1881.

A letter was also read from John C. Gray, nephew of the late John C. Gray, acknowledging, in behalf of the family, the receipt of the resolutions passed by the Society in memory of his uncle, and their gratification at the sentiments expressed in regard to Mr. Gray by a society in whose proceedings he took so warm an interest.

William Gray, Jr., called the attention of the Society to the fact that the "Challenge Cup," which had been won by him for the last two years as a prize for roses, was again to be competed for.

The President read the following letter:

BOSTON, June 2d, 1881.

F. B. HAYES, Esq., *Chairman Executive Committee:*

Dear Sir,—Thirty-three years of constant business activity, nearly fifteen of which have been spent in the service of this Society, lead me to desire retirement and rest.

I therefore tender to you my resignation of the office of Treasurer, to take effect when my successor shall be appointed and qualified.

In taking this course, I assure you that my interest in the welfare of the Society, and of individual members, will not be broken.

Respectfully,

E. W. BUSWELL.

The President stated that the Executive Committee had accepted Mr. Buswell's resignation, and had appointed George W. Fowle, of Jamaica Plain, Treasurer of the Society and Superintendent of the Building.

Hon. Marshall P. Wilder moved that a committee of three be appointed by the chair to consider what acknowledgment should be made to the retiring Treasurer for his services. The motion was carried unanimously, and the chair appointed Mr. Wilder, Charles O. Whitmore, and William Gray, Jr., as that Committee.

The President announced that the Executive Committee had appointed the Secretary of the Society, Robert Manning, to the office of Librarian.

The meeting was then dissolved.

BUSINESS MEETING.

SATURDAY, July 2, 1881.

A stated meeting of the Society was duly notified for 11 o'clock today, and the President was in the chair, but no quorum was present, and the meeting

Adjourned to Saturday, August 6.

BUSINESS MEETING.

SATURDAY, August 6, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

William C. Strong moved to rescind the vote passed September 13, 1879, that the President and Vice-Presidents should be ineligible for more than one reëlection.

The President here retired, after calling Ex-President Hon. Marshall P. Wilder to the chair. Mr. Strong's motion was seconded by Aaron D. Capen, and unanimously passed, and the President resumed the chair.

The President reported from the Executive and Finance Committees, to whom the repairs and alterations of the building were intrusted, that the repairs of the halls would be completed before the Annual Exhibition, which was to commence on the 13th of September.

Agreeably to the Constitution and By-Laws the President reported the following Committee to nominate suitable candidates for the various offices of the Society for the ensuing year,—William Gray, Jr., William H. Spooner, Charles H. B. Breck, Charles N. Brackett, Charles M. Atkinson, Charles F. Curtis, John C. Hovey.

On motion of Charles M. Hovey, Mr. Hovey, Hon. Marshall P. Wilder, and Robert Manning were appointed a Committee to nominate twenty delegates to the meeting of the American Pomological

Society, in September next, with power to add to their number or appoint substitutes.

The following named persons, having been recommended by the Executive Committee, were on ballot duly elected members of the Society:

Andrew Washburn, of Hyde Park.
P. W. Van der Veur, of New York.
J. Willard Hill, of Belmont.
Dean Pierce, of Brookline.
G. W. Batchelder, of Dorchester.
George W. Hollis, of Grantville.
John Thorpe, of Queens, N. Y.
Edwin S. Barrett, of Concord.
Dr. William H. Ruddick, of South Boston.
Hon. Oliver Ames, of North Easton.
William Bliss, of Springfield.
Charles Fairchild, of Belmont.

Adjourned to Saturday, September 3.

BUSINESS MEETING.

Saturday, September 3, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

William H. Spooner, from the Committee to nominate officers for the year 1882, presented the report of that Committee.

It was announced that Charles O. Whitmore, who at the end of the year will have completed fifteen years of service as Chairman of the Finance Committee, (having previously been for five years a member of the Committee,) had declined a reëlection, and Hon. Marshall P. Wilder took occasion to speak of Mr. Whitmore's services to the Society, especially in purchasing the site and securing the erection, of the Society's present building, which probably could not have been effected but for the steadfast and indomitable perseverance of Mr. Whitmore, who never wavered in the belief that the course finally adopted was for the interest of the Society.

The report of the Committee was laid on the table and it was voted that the Committee be continued and requested to nominate candidates in place of any who might decline before the election.

Charles M. Hovey, Chairman of the Committee appointed at the last meeting to nominate a list of delegates to the meeting of the American Pomological Society, to be held in this city September 14–16, reported the following, which was accepted:

President, Francis B. Hayes, Chairman.

Marshall P. Wilder,	Charles F. Curtis,
Charles M. Hovey,	J. W. Manning,
James F. C. Hyde,	O. B. Hadwen,
William C. Strong,	P. B. Hovey,
William Gray, Jr.,	Warren Fenno,
C. O. Whitmore,	John C. Hovey,
John B. Moore,	Charles H. Hovey,
John Cummings,	J. H. Woodford,
Benjamin G. Smith,	Charles N. Brackett,
F. L. Ames,	John G. Barker,
C. H. B. Breck,	E. W. Buswell,
Robert Manning,	Samuel Hartwell,
Hervey Davis,	E. P. Richardson,
E. W. Wood,	William H. Hunt.

Hon. Marshall P. Wilder, Chairman of the Committee appointed June 4th, to consider what acknowledgment should be made to the retiring Treasurer, for his services, reported as follows:

The Committee to whom was referred the matter of an acknowledgment of the services of the late Treasurer of the Society, Edwin W. Buswell, report

That, in consideration of the long and varied services of Mr. Edwin W. Buswell in the several offices which he has held in the Massachusetts Horticultural Society, they recommend that a gratuity be presented to him of five hundred dollars.

Marshall P. Wilder,
Charles O. Whitmore,
William Gray, Jr., } *Committee.*

The report was accepted.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were, on ballot, duly elected:

J. Allen Crosby, of Jamaica Plain.
Silas Pierce, of Boston.
E. W. Willard, of Middletown, R. I.

The meeting was then dissolved.

BUSINESS MEETING.

Saturday, October 1, 1881.

A stated meeting of the Society, being the annual meeting for the choice of officers, was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

The Recording Secretary stated that the requirements of the Constitution and By-Laws, in regard to notice of the meeting, had been complied with.

The chair appointed Benjamin G. Smith, John G. Barker, and Robert Manning, a committee to receive, assort, and count the votes given, and report the number.

The polls were opened at eighteen minutes past eleven o'clock.

The following named persons were proposed for membership in the Society: Thomas Strahan, of Chelsea, and Christopher H. Starr, of Boston, by George W. Fowle; Rev. B. Judson, of West Dedham, by F. Copeland; Robert Elder, of Watertown, by John C. Hovey; S. F. Terwilliger, of Saratoga Springs, N. Y., by H. D. Wilmarth; and Henry Woods, of Dorchester, Hon. James P. Ray, Frank B. Ray, Hon. Joseph G. Ray, Edgar R. Ray, James F. Ray and William F. Ray, all of Franklin, by Hon. Marshall P. Wilder.

Hon. Marshall P. Wilder made appropriate mention of the long and valuable services (beginning in 1862), of Charles O. Whitmore, as Member and Chairman of the Finance Committee, and of his declination of a reëlection to that position, and moved that a committee be appointed to consider what acknowledgment should be

made to Mr. Whitmore for his services. The motion was carried, and the Chair appointed as that Committee, Hon. Marshall P. Wilder, C. H. B. Breck, and William Gray, Jr.

Mr. Wilder also announced the decease of Samuel Downer, a son of one of the founders of the Society and himself an old and active member, and moved the appointment of a committee to prepare memorial resolutions. This motion was carried, and the Chair appointed Mr. Wilder, Aaron D. Capen, and Rev. A. B. Muzzey, as that Committee.

Dr. John A. Warder, of Cincinnati, Ohio, President of the Ohio State Horticultural Society, and a Corresponding Member of this Society, who was present, was called on by the President to address the meeting. Dr. Warder, who is also President of the American Forestry Association, and deeply interested in the promotion of arboriculture, spoke on that subject, substantially as follows:

Address of Dr. John A. Warder, on Arboriculture.

Dr. Warder said that western people when they cross the Alleghanies do not feel that they have anything to tell—they look to the east for light. Agriculture—and horticulture, which is a branch of agriculture—are complex subjects, and while in parts of our country the pioneers are engaged in cutting down the forest to plant grain, in other parts the necessity of planting timber trees is, or will soon be, felt. He thought that this climacteric is fast approaching, and had come to Massachusetts to see what he could of interest in this branch of agriculture, and intended this afternoon to visit the estate of Ben: Perley Poore, at West Newbury, and see his young plantations of white ash and white pine, and his famous premium oaks. He had visited the plantations of the Messrs. Fay, at Lynn and Wood's Holl, and viewed the extensive plantations of pitch-pine and cranberries on sandy Cape Cod. Though on that wretched soil there could be no noble oaks, poplars, or catalpas, Nature provides a tree for every peculiar condition of soil or climate, and on these poor lands the *Pinus rigida* or pitch-pine flourishes—not, however, growing large enough for timber, but very soon yielding valuable firewood. In the rich soils of some parts of the country the weeds would overcome the young trees planted in them, but there no such trouble is experienced. Wherever it is

desired to induce people to plant trees they must be shown the cheapest way.

Professor Sargent, of the Arnold Arboretum, recommends American trees as most desirable for planting, and Dr. Warder agreed with him that they are most likely to be successful, but would not wholly discard trees of foreign origin. The *Ailanthus glandulosa*, which was introduced some years ago as an ornamental tree, is now being planted largely for timber, and though the speaker had feared it would not stand well so far north, it has proved otherwise. The timber is of some value; it is not strong, but takes a good finish and the color is good where a quiet tone is desired.

At Falmouth in this State there are large trees of the *Catalpa speciosa*. The distinction between this and the eastern form was first brought to the attention of the speaker in 1853, and noticed by him in the "Western Horticultural Review," which he then edited. He then felt some diffidence in calling it a distinct species, but suggested that as it was a distinct variety it should be called *Catalpa bignonioides speciosa*. It is now recognized as a species, and Dr. Warder acknowledged it as his hobby. It has been disseminated largely from Cincinnati, and is now grown by the million, at the nurseries of his friends, Robert Douglas & Sons, Waukegan, Ill. The original habitat of this species is but a few hundred miles in diameter. The tree is of very rapid growth and it is useful for ornamental planting, but its great value as a timber tree has not been understood until lately. It is very durable, there being many instances of fence posts of this timber enduring for seventy-five years. General Harrison, when at Vincennes, learned its value from the French and Indians, but did not know that it was a distinct species. In twenty years it will make three railroad ties per tree. H. H. Hunnewell, Esq., of Boston, has contracted with Messrs. Douglas, of Waukegan, for the planting of several hundred acres of this tree in Kansas. The soil is broken up and planted with grain for one year or more before setting out the catalpas. They are planted four feet apart, taking nearly three thousand to the acre, and Mr. Douglas agrees to furnish the trees and plant and tend them for three cents each, until they are old enough to take care of themselves.

In reply to a question by Leander Wetherell, Dr. Warder said that the Norway Spruce is the most successful evergreen at the West; but, on the exposed prairies no evergreen should be planted first.

The cheap trees, like the cottonwoods, must come first, to afford protection to the more valuable kinds. The adaptation of the European larch to the West, is not yet determined. The speaker found when in Germany, that two grades of this lumber were recognized there. One, growing in low grounds, is inferior, but that which grows in Alpine regions is valuable. In Styria he saw larch trees cut for railroad ties for the Viceroy of Egypt, who was to pay one dollar for each tie. In the West it generally grows well enough, but when less than twenty years old, though it blossoms and fills out its cones, it does not pefect its seeds. The conditions required for perfecting a species are numerous, and Mr. Sargent has laid it down as an axiom that no tree will be of permanent value in a region where it does not perfect its seed.

European rules of forestry, which direct to plant young trees without ploughing the land, are not adapted to the rich soils of the West. There the plantation must be tilled for three years, by which time it will be found that the trees have taken possession. After the prairie has been broken up and tilled for a year or two, it is furrowed both ways, and the trees are planted at the intersections of the furrows. If not tilled, the grass and weeds would soon smother the young trees. The cost of planting varies; cottonwoods, from the river bars in the West, are sold at the rate of one hundred dollars per *million*. When planted closely, they run up and require little trimming. The early settlers failed in their planting from not recognizing the difference in the requirements of their rich soils and the poorer lands of Europe. Now the sod is broken and cultivated in corn for a year before planting. It pays to cultivate the soil and keep it loose, so as to give the young trees a start.

President Hayes alluded to a visit which he received from the late George B. Emerson, who expressed great pleasure in seeing that he had preserved the native pitch pines. No tree has so much variety and picturesqueness as this; there are no two alike, and they are, therefore, valuable for ornament.

Dr. Warder said, in answer to an inquiry by Mr. Wetherell, whether a man could afford to grow forest trees on tillable land, that if one wants to make a large per cent. at once, he had better plant corn, but on every farm there are waste places, where in thirty years a good crop of trees could be grown. The black locust is ready for the axe in thirty years. At from twenty to

thirty years of age, it has yielded a thousand dollars per acre in the west.

Leander Wetherell spoke of an Illinois farmer, who said that as long as he could raise corn enough on an acre to pay for a year's supply of coal he preferred to do it, rather than to cut and haul wood.

Dr. Warder said that Mr. Wetherell's suggestion was a practical one. In Illinois, the farmers say they cannot afford to devote good soil to wood, but they ignore the general beneficial effect. In Iowa, where there are fewer trees than in Illinois, — in some parts averaging only an acre of wood to a square mile, — the need of trees is felt more strongly. One man there has planted them around every field, and found that when one-fifth of his ground is in wood, his crops are larger than if the whole were in grain.

In reply to an inquiry as to the climatic effects of trees, Dr. Warder said that the question is a very large one. The Romans suffered from the cold in France, and died when pursuing their enemies into Germany and Austria, the countries from which we now procure our finest wines. In Spain the population is diminishing, owing to the removal of forests. Great changes have been observed, both from the removal and the planting of trees. The question of the effect of forests on the rainfall, is also very wide, and is now being worked up by meteorologists. Not only the rain, but the humidity of a climate between falls of rain, is important, and we know that this is increased by the presence of trees. What becomes of a good rain when it falls on the ground? In a country unprovided with trees, a south wind would dry it up in a much shorter time than in one furnished with a proper proportion of wood. Here lies our danger in the dry climate of the United States.

President Hayes said that when in Madrid, he was astonished at the desolation and bareness of the hills around that city and the Escurial. It was uncomfortably cold there; the east winds were worse than in Boston. A few years afterwards he went to Germany, and became acquainted with one of the government foresters there, and it was interesting to see how all the trees were taken care of. It was a rule that for every tree taken away another should be planted.

Dr. Warder said that one great element of destruction to the forests of Spain, was the sheep which ate up even the seeds of the

trees. The same cause is now operating to destroy the forests in the Sierras of California. The Moors in Spain believed with Mahomet, that the *trees were fathers to the rain.*

On behalf of his western associates, recently here, Dr. Warder desired to express heartfelt thanks to the members of this Society for the courteous hospitalities that had, on every hand, been bestowed upon the visitors.

Hon. Marshall P. Wilder, as President of the American Pomological Society, expressed his gratification at the elegant preparations made for the reception and accommodation of that Society during its meeting in this city, from the 14th to the 16th of September, and especially for the banquet given it by the Horticultural Society.

The polls were closed at eighteen minutes past twelve o'clock, and the Committee to receive, assort, and count the votes, reported the whole number to be fifty-three, and that all the persons whose names were on the ticket presented by the Nominating Committee were chosen. These persons were, agreeably to the Constitution and By-Laws, declared by the President to have a majority of votes, and to be elected Officers and Standing Committees of the Society for the year 1882.

Adjourned to Saturday, November 5.

BUSINESS MEETING.

SATURDAY, November 5, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

The President, as Chairman of the Executive Committee, reported a recommendation that the appropriations for Prizes, and for the Committees on the Library, on Publication and Discussion, and of Arrangements, for 1882, be the same as the present year, viz.:—

For Prizes, ...	$3,050
For the Library Committee, for the purchase of magazines and newspapers, binding of books, and incidental expenses of the Committee, .	200

For the Committee on Publication and Discussion,	$150
For the expenses of the Committee of Arrangements,	250

The Report was accepted, and, agreeably to the Constitution and By-Laws, was laid over until the stated meeting in January.

Hon. Marshall P. Wilder appropriately announced the decease of the Hon. John Amory Lowell, a son of the late Hon. John Lowell, who presided at the first meeting held to form this Society, and himself an Original Member and a benefactor of the Society, and moved the appointment of a committee to prepare memorial resolutions. The motion was carried, and the chair appointed, as that Committee, Mr. Wilder, William Gray, Jr., and C. H. B. Breck.

Mr. Wilder, as Chairman of the Committee to prepare resolutions in memory of Samuel Downer, made the following report: —

The undersigned, a Committee to whom was referred the duty of preparing resolutions in regard to the memory of Samuel Downer, respectfully report the following: —

Resolved, That in the death of Samuel Downer, junior, — as his name first appears on our records, — one of our oldest Life Members, the Massachusetts Horticultural Society have to mourn the loss of a sincere friend and promoter of the objects of our association. Mr. Downer's father was one of the Founders of our institution, and his portrait, by the generosity of our lamented friend, now adorns the walls of our hall. Samuel Downer, junior, whose loss we deplore, inherited his father's love for horticulture, and retained, in excellent condition, the old homestead to the day of his death. He was himself formerly a successful cultivator, exhibiting fine specimens of fruits, particularly of the pear, and was present at the celebration of the Semi-Centennial Anniversary of the Society.

Mr. Downer was also an upright, energetic, and enterprising merchant, the founder and proprietor of the extensive kerosene works at South Boston, and to him, more than to any other man, are the public of New England, if not the whole country, indebted for the introduction and general use of this manufacture. He was not only a man of enterprise, but felt a lively interest in the welfare of society. He founded the Melville Gardens, at Downer's Landing, from benevolent motives, and from a desire for a place of recrea-

tion where all could resort without fear of meeting any but pure and good influences. This object was very near his heart, and only a few weeks before his death he expressed, to one of this Committee, his intention to make it more and more worthy of the approbation of the public. But more than this, Mr. Downer was early associated with the friends of freedom and the emancipation of the slave, and a few years ago held, at Downer's Landing, a reunion of them and the old Free-Soilers, of whom he was one, an account of which was published.

Resolved, That a copy of these proceedings be forwarded to the family of the deceased.

The report was accepted, and the resolutions were unanimously passed.

The President reported the following votes, recommended by the Executive Committee, which were unanimously passed: —

Voted, That it is the opinion of the Massachusetts Horticultural Society that the proposed arrangement between Harvard College and the City of Boston, for the joint occupancy of the Arnold Arboretum, will give to the City of Boston, and the whole country, a free educational institution of great value, through which the popular taste for the cultivation and study of trees and the science of Forestry, will be fostered and increased.

Voted, That the Secretary send a copy of the above to the Honorable the City Council of the City of Boston.

The following named persons, having been recommended by the Executive Committee, were, on ballot, duly elected members of the Society.

Thomas Strahan, of Chelsea.
Christopher H. Starr, of Boston.
Rev. B. Judkins, of West Dedham.
Henry Woods, of Dorchester.
S. F. Terwilliger, of Saratoga Springs, N. Y.
Hon. James P. Ray, of Franklin.
Frank B. Ray, " "
Hon. Joseph G. Ray, " "
Edgar K. Ray, " "
James F. Ray, " "
William F. Ray, " "
Charles J. Lee, of Dorchester.

Adjourned to Saturday, December 3.

BUSINESS MEETING.

SATURDAY, December 3, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, Hon. Francis B. Hayes, President, in the chair.

Hon. Marshall P. Wilder, Chairman of the Committee to prepare resolutions in memory of Hon. John Amory Lowell, made the following Report:

The Committee to whom was referred the duty of preparing resolutions in regard to the decease of the Hon. John Amory Lowell, present the following:

Resolved, That in the death of John Amory Lowell, this Society has lost one of its oldest and most highly respected associates—one of the Original Members, who subscribed before its organization on the 17th of March, 1829—and the worthy son of him who did so much to advance its interests and the agriculture and horticulture of New England.

Resolved, That we shall ever cherish in our memories the recollection of Mr. Lowell's interest in the objects of this Society, his excellent character, his eminent usefulness, and his generous impulses in promoting the happiness of his fellow men. As one of the distinguished promoters of New England manufactures, the custodian of the funds of the Lowell Institute, the benefactor himself to our own and other associations, his name will long be cherished; and not only for these, but for his generous and conscientious devotion to the best interests of our city, state, and country, and of humanity,—an upright man, a Christian gentleman, and a most useful citizen.

Resolved, That these proceedings be entered on our records, and that a copy thereof be sent to the family of the deceased.

MARSHALL P. WILDER,
Chairman of Committee.

President Hayes said that he was most happy to bear his tribute to the excellence of Mr. Lowell's character. Before his admission

to the bar, and since then, he had been acquainted with Mr. Lowell, and had the opportunity of knowing him and what subjects he was most deeply interested in. He knew him as a business man, as a donor to our benevolent and scientific institutions, as one of the chief pillars and benefactors of the Church of King's Chapel, and a most valuable member of the community. He not only took a deep interest in horticulture, but was himself an eminent botanist, having a large herbarium of his own collecting. By his will he bequeathed $20,000 to the Botanic Garden connected with Harvard College. For many years he had been one of the Fellows of the College, and it is through his services and his interest in the Botanic Garden that it occupies its proud position, with the first botanist in the world at its head.

Mr. Wilder said that the Hon. John Lowell, the father of John Amory Lowell, presided at the first meeting held to form this Society; and his father, Judge John Lowell, was well known for his rural tastes, and had a garden in Roxbury which was inherited by his son. John Amory Lowell inherited a taste for horticulture from his father and grandfather, but had not time to practise it, and therefore presented his collection of plants and his horticultural and botanical library to the Botanic Garden. His heart was always open to appeals in behalf of every good work.

Charles M. Hovey said that he was happy to be present, and to have the opportunity to express his concurrence in the resolutions, which express the sentiments of the Society. To Mr. Lowell, whose donation to the Society was made at a time when its resources had been heavily taxed by the erection of the first Horticultural Hall, we are indebted for much of its prosperity. Mr. Lowell was the son of one of our most enthusiastic horticulturists, who contributed to the Magazine of Horticulture, established by Mr. Hovey, and whose choice collection of plants Mr. Hovey looked over with him but a short time before his death. The donations of the son to the Botanic Garden, at Cambridge, have been such as to enable that institution to maintain its high position. Mr. Hovey congratulated the Society that it had been aided by such a man, for whose memory we shall always retain a grateful respect.

The resolutions were unanimously passed.

The Annual Report of the Committee on Plants and Flowers

was read by William H. Spooner, Chairman, accepted, and referred to the Committee on Publication.

On motion of Mr. Spooner, it was unanimously

Voted, That the Prospective Prize of $40 for the best Seedling Flowering or Foliage plant (other than Rose, Camellia, Azalea Indica, Tree Pæony, Hardy Rhododendron, or Hardy Azalea), be awarded to James F. C. Hyde, for his Seedling Gladiolus, Hyde's White, as recommended in the Report of the Committee on Plants and Flowers.

The Annual Report of the Committee on Fruits, was read by E. W. Wood, Chairman.

The Annual Report of the Committee on Vegetables, was read by Charles N. Brackett, Chairman.

The Annual Report of the Committee on Publication and Discussion, was read by Benjamin G. Smith, Chairman.

John Robinson, from the Library Committee, read the Annual Report of that Committee.

Robert Manning read his Annual Report as Secretary and Librarian.

These Reports were severally accepted and referred to the Committee on Publication.

The Chairman of the Committee on Gardens, asked further time to prepare his Annual Report, which was granted.

The President reported from the Executive Committee the List of Prizes to be offered for the year 1882, with the approval of that Committee. The list was laid on the table for examination by the members of the Society.

George B. Kelly, of Jamaica Plain,

having been recommended by the Executive Committee was, on ballot, duly elected a member of the Society.

Adjourned to Saturday, December 10.

BUSINESS MEETING.

SATURDAY, December 10, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, Hon. Francis B. Hayes, President, in the chair.

John O. Sargent, of Lenox, was proposed by the President, as a Life Member of the Society.

E. W. Wood, from the Committee of Arrangements, read the Annual Report of that Committee.

John G. Barker, Chairman of the Committee on Gardens, read the Annual Report of that Committee.

These reports were severally accepted and referred to the Committee on Publication.

The Schedule of Prizes for 1882, presented at the last meeting and then laid on the table, was taken up and unanimously adopted and referred to the Committee on Publication.

The President expressed his gratification at the manner in which the annual reports of the various committees, which were now concluded, had been made. They were not only promptly presented, but were admirably prepared. He spoke particularly of the commendation by the Garden Committee of Mr. Moore's peach orchard and vineyard, which he had visited himself. He could join the Committee in speaking of Mr. Moore's place as a model of neatness and good cultivation.

Benjamin G. Smith, Chairman of the Committee on Publication and Discussion, announced that the series of meetings for discussion the present season, would begin on the next Saturday with the reading of a Prize Essay by Mrs. T. L. Nelson, of Worcester, on "Our Native Plants, Adapted for Winter Culture, for their Flowers," and that on the succeeding Saturday, John Robinson, Professor of Botany and Vegetable Physiology to the Society, would read a Paper on "Ornamental Arboriculture."

John B. Moore, a member of the Committee on Publication and Discussion, added that the Committee hoped to make the discussions better than ever before, but that to do this they must have the coöperation of the members of the Society. Dr. Goessman, the Professor of Chemistry at the Agricultural College, had been invited to lecture, and the Committee trusted that during the winter we should have the pleasure of hearing from him.

The Secretary read the following correspondence:—

MASSACHUSETTS HORTICULTURAL SOCIETY,
BOSTON, October 17, 1881.

Dear Sir: Some time ago I had the honor to send to the Royal Horticultural Society a copy of the History of this Society, which, Dr. Masters wrote me, was placed in the Lindley Library. I have thought that you might like to add to this volume the other publications of this Society and, therefore, send a set as far as they can be obtained. I beg that they may be received as a token of the regard entertained by this Society for the Royal Horticultural Society of London—the prototype and exemplar of all horticultural societies—to which we, in common with all other similar associations, feel under the deepest obligations.

We have in our Library the quarto Transactions of the Horticultural Society of London, complete, and of the octavo Journal the first nine volumes. Dr. Masters wrote me that the supply of the latter, in the hands of the Society, is quite exhausted, but if you can refer me to some bookseller who would be most likely to secure the succeeding parts, and also inform me what has been published since 1854 and is necessary to complete our set up to the present time, you would confer a favor on this Society.

Can you tell me how many parts of Lindley's Folia Orchidacea were published? We have eight parts, unbound, and supposed it to be complete, but I observe that the last edition of Pritzel's Thesaurus says *nine* parts. I should like, before binding, either to complete it or to be certain that there is no more.

Is Dr. Masters's Vegetable Teratology out of print? We ordered a copy nearly two years ago, but have never got it.

I hope I have not taken too great a liberty in troubling you with these inquiries, but trust you will sympathize with my desire to make our library as complete as possible. It is already the best horticultural library in this country, and, so far as we are informed, is excelled by few in Europe. I can hardly hope to be able to make you any return for the favors I ask of you, but shall be very glad to if it is ever in my power.

Yours respectfully,
ROBERT MANNING,
Secretary and Librarian.

REV. GEORGE HENSLOW, *Librarian Lindley Library.*

ROYAL HORTICULTURAL SOCIETY,
KENSINGTON, S. W., November 21, 1881.

Dear Sir: I had the gratification, as Foreign Secretary, to read your letter of the 17th ult. to the Rev. George Henslow, Librarian of the Lindley Library, to the Council of the Society at its last meeting, and I was instructed in reply to express the cordial thanks of the Council of the Society and of the Trustees of the Lindley Library for your valuable donation of books. The Council is touched at the cordial manner in which you are pleased to speak of the Society and its past work, and is anxious to maintain and develop friendly relations with your Society. A new part of the Journal will be sent to you shortly, and I am to bring under your notice the fact that the Society is in a position to supply you with grafts (at the proper season), tubers of begonias, and roots and seeds of other ornamental and useful plants. Application for these should be made to the Superintendent of the Society's Garden, at Turnham Green, near London.

Five volumes of the New Series of the Journal have been published; Vol. 1, 1866; Vol. 2, 1870; Vol. 3, 1872; and Vols. 4 and 5, in 1879. Enquiries are being made for them, and if they can be procured, they shall be sent to you.

There is, I fear, little or no chance of getting the ninth part of the Folia Orchidacea, as the copies were, I believe, destroyed as waste paper.

Dr. Masters's Teratology was published by the Ray Society, and is, I believe, out of print. There is little or no chance of getting it except at an auction.

I may add that I shall be pleased to be of service to the Society or to yourself, and am sir,

Faithfully yours,
MAXWELL T. MASTERS,
Hon. Foreign Secretary,
Royal Hort. Society.

To ROBERT MANNING, ESQ.

The Secretary also announced the reception of a letter from Dr. Hermann Knoblauch, President of the Imperial Leopold-Carolinian German Academy of Naturalists, at Halle, Prussia, asking an exchange of publications.

Adjourned to Saturday, December 17.

BUSINESS MEETING.

SATURDAY, December 17, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair. No business being brought before the meeting it

Adjourned to Saturday, December 24.

MEETING FOR DISCUSSION.

This was opened by the reading of the following Prize Essay by the author:

OUR NATIVE PLANTS ADAPTED FOR WINTER CULTURE FOR THEIR FLOWERS.

BY MRS. T. L. NELSON, OF WORCESTER.

When summer flowers have bloomed and faded, and the aster and golden-rod are in their glory,—when on the hills the gorgeous tints of autumn are glowing and shimmering in the hazy atmosphere, we begin to think of the time when there will be nothing outside to even remind us of leaf and flower; and then we gather, if we will—for nature is lavish of her treasures,—our winter stores. What visions of the past rise before us, when all out-doors is bound in snow and ice, at the sight of a "winter greenery," as we sit before the fire and our gaze dreamily wanders toward the place where it is sitting. Again we are in the woods enjoying ourselves. At our feet sparkles and dashes the little brook, and, by its side, moss, lichen, and fern are beautiful as ever; we hear the rustle of the leaves over our heads, and it seems so real that it is hard to break the spell.

But all this must be gathered before it can be enjoyed. Meadows, swamps, fields, and woods are to be visited and carefully searched, for in them, oftentimes only indicated by a dried leaf or berry, are the plants, bulbs, and tubers which are resting, and, therefore, the more to be sought after for winter bloom,—for I have found, by

carefully watching, that plants which bloom in spring and early summer are more to be relied upon for flowers in winter than later blooming ones. Of course you know that, in cultivated flowers, we select the largest and strongest bulbs and roots for winter blooming. If we wish to grow lilies for winter flowering, we select the finest bulbs, for in them is stored the perfect leaf and blossom. So in our selection of native plants—select the strongest and best, for some will fail. Surely no florist expects to bloom all the plants and bulbs that he puts in his houses; and for some unexplained reason some—in fact many—refuse to give us flowers in winter, yet they bloom abundantly in their native soil and season. I find from experience that most native plants can be grown successfully in light woody soil, with a mixture of meadow moss; and also that flat wire baskets or dishes, not more than three inches in depth, lined with moss, and filled with earth, in which to set the plants, are better than close dishes. After they are filled set them in a dish or saucer with water in it. In this way, the moss acts as an absorbent, and supplies water as the plants require it. Moss on the surface, between the plants, is useful in counteracting the dryness of the air in our living rooms—for I take it for granted that native plants are to adorn and beautify our homes; they are not often found in greenhouses. In speaking of the depth of the dishes, I am assuming that only small-growing plants are likely to be cultivated.

And now we will take a look after plants.

First, let us gather *Epigæa repens* (Trailing Arbutus). It ought to be gathered as late as possible, for the buds must be formed before gathered, and then it is not necessary to have much root; only keep the plants moist and close. I have not succeeded often in flowering it, except in a fernery or wardian case, but it is almost sure to bloom under glass, if properly gathered; and how beautiful it is we all know.

Hepatica triloba and *H. acutiloba* have thick, persistent leaves, and also form their buds in autumn. I find them among the surest of winter blooming plants; in fact, they bloom in all places—in ferneries or dishes, sun or shade, their pure little blossoms appear almost before we know, or dare expect it.

Sanguinaria Canadensis (Blood-root) can be easily flowered, and although the foliage is coarse, as the flower comes before the leaf is grown, and as the plants can be forced but once, the foliage

is of no consequence. The flower is pure white, and exquisitely beautiful.

Calla palustris (Water Arum), our wild calla, growing in muddy and swampy places, is really an attractive plant, and, having a tuber like *Richardia Æthiopica*, can be easily grown, and with similar treatment. In Massachusetts it is herbaceous, and blooms in early summer.

Next we will look after *Arisæma triphyllum* (Jack-in-the-pulpit), which forces finely. You can readily find it by its bunch of intense scarlet berries. On taking away the old stalk, you will find the bud ready to start when you are ready to start it. I have seen exceedingly fine plants of it in winter; and with their stately leaves and blossom, they are really very beautiful. They grow equally as well in open dishes or baskets as in a fernery.

Sarracenia purpurea (American Pitcher-plant) is easily grown in wet, peaty moss, and, aside from the beauty of its "pitchers" (which you know are really the leaves of the plant), has a very curious flower. It is found in swamps and low, moist ground.

Erythronium Americanum (Yellow Dog-tooth Violet) bears cultivation well, but will not bear the sun. It is one of the earliest spring flowers and is desirable, as both flower and foliage are beautiful. The foliage varies in marking; sometimes it is very much spotted, and again almost as entirely green.

The lovely *Houstonia cærulea* has never been sung by poets, but nevertheless it is lovely beyond compare. Pure and innocent, it raises its sweet little face to our gaze, and we think of all that is good as we look down upon it. I gathered "alpine daisy" on Mount Washington, and admired its lovely blossoms, but, at the time, remarked to a friend, that it was no more beautiful than our little neglected *Houstonia*. This flower is also among the earliest spring flowers. What would be easier, as it grows in clumps, than to take up a piece or clump, and not disturb the roots, and when it has rested let it bloom in winter?

Clintonia borealis has a greenish yellow, bell-shaped, lily-like flower, which can be cultivated with considerable success, and all must be pleased who do succeed.

The *Trilliums* are easily grown if you mark the place where they are before the leaves are gone, and take them up after the foliage has ripened. There are at least three species,— *T. grandiflorum*, *T. erythrocarpum* (Painted Trillium), and *T. erectum*,

and they are all so beautiful it is a wonder more are not bloomed in winter.

Then the *Cypripediums*. I have three species growing in my garden,— *C. parviflorum* (small yellow), *C. pubescens* (large yellow), and *C. spectabile* (pink, or pink and white). I have never flowered them in winter, but they adapt themselves so readily to the garden I take it for granted there can be no difficulty in so doing. I know that *C. spectabile* forms its buds late in the autumn under the old stalk, precisely as *Arisæma* buds are found, and that shows conclusively that one can be grown as well as the other.

Coptis trifolia (Gold-thread) is very attractive, with its dark green leaves that shine in the sun as if wet with dew. The flower is pure white, and contrasts admirably with the beautiful foliage.

Mitchella repens (Partridge berry) is one of the most charming of all our winter friends, for we get the persistent foliage, and bright scarlet berries; and then it blooms finely in the fernery (and oftentimes out), and we have a combination rarely found, and doubly welcome for its beauty and rarity.

Pyrola (Wintergreen) buds in autumn, and blooms well.

Violets are so abundant in variety, that we have only to choose for ourselves; but with them, and in fact all that I have mentioned, we must make a study of their individual habits, and learn how much sun, light, moisture, etc., they require, and give them as fair a chance as the flowers we take from our gardens. I do not believe our native plants are harder to grow, or need more rest and care, than ordinary plants; but do you think we should take as much pains to grow one of our native Cypripediums as we do some of the imported species that are not nearly as beautiful?

I have no doubt that many of our native shrubs are as well worth growing, both for pleasure and profit, as the Deutzias, Spiræas, and Azaleas. *Amelanchier Canadensis* (Shad bush) grows and flowers so freely, there can be no doubt about cultivating it.

Leucothoë racemosa, if only for its mythical relation, might be brought into notice. And what more lovely flower in winter than *Rhodora Canadensis*, with its rose-purple flowers in umbel-like clusters, blooming before the leaves appear.

> "Rhodora! if the sages ask thee why
> This charm is wasted on the earth and sky,
> Tell them, dear, that if eyes were made for seeing,
> Then Beauty is its own excuse for being:

Why thou wert there, O rival of the rose!
I never thought to ask, I never knew:
But, in my simple ignorance, suppose
The selfsame Power that brought me there brought you."

Azalea nudiflora, our pink or purple wild Azalea, grows well in our gardens, and blooms when the plants are small, as does, also, *A. viscosa*, the white variety. Both varieties are growing and blooming finely in two gardens near me, where there is more or less clay, which goes to show that they are not particular as to soil. What, therefore, is to hinder growing them under glass as well as the imported species? I think, however, they should be taken up in the spring and grown through the summer and autumn, in order to obtain good results.

Rhododendron maximum adapts itself readily to our gardens, grows as well as the kinds we cultivate in them, and is more hardy. Why not try and grow it for winter bloom?

And so the list might be extended to be quite as long as the list of the cultivated plants that will bloom well in winter. You know, of course, I do not mean stove plants, but only such varieties as are ordinarily grown in winter. Fashion is all-powerful, and if we could make it more fashionable to wear, or to have on our tables, native violets than the foreign varieties, how the greenhouses and florists' windows would overflow with the modest flowers. Or the beautiful Azaleas, Arbutus, or Sanguinaria, instead of Marigolds and Sunflowers. As it is, "somebody" starts a fashion and everybody follows it. All the time we look eagerly for "novelties" from any source, at home or abroad, and too often we pay dearly for very little. Why, then, do we not begin at home, and see what can be done with our native plants?

Discussion.

Mrs. C. N. S. Horner was called on to open the discussion on the essay, and said that the subject is one which has always interested her. There are a large number of native flowers which will repay cultivation. The *Campanula rotundifolia* (Harebell) is easily cultivated, and flowers from June to November. The *Asclepias tuberosa* (Butterfly Weed) is very satisfactory. Among native plants, which she had successfully cultivated in winter, are *Sanguinaria Canadensis*, *Cypripedium pubescens*, *Goodyera pubescens* and *G. repens*, *Hepatica triloba*, *Epigæa repens*, *Coptis trifolia*, and

Viola Canadensis and other violets. The *Sarracenia purpurea* does very nicely; she had had a plant, cultivated in the house in winter, with five flowers.

E. H. Hitchings said that many have tried to cultivate the *Epigæa repens* (Trailing Arbutus), but it succeeds for only a year or two. The *Hepatica* is very easily cultivated. The speaker exhibited a plant which he found in Stoneham woods on the 5th instant—one of five which were in flower. The plant shown had the remains of three flowers, one of which probably bloomed in October and the others in November, and several buds which would probably open in a month, making the season of bloom about three months. Wild flowers were in bloom in the woods from April, 1879, to November, 1880, inclusive. Some wild flowers are improved by cultivation, among which are the *Sanguinaria Canadensis*, *Lobelia cardinalis*, and *Trillium grandiflorum*. Some, such as the Painted Trillium, are quite as handsome in fruit as in flower; and the fruit of the Nodding Trillium is more beautiful than the flower. The *Pyrolas* and *Chimaphilas* do well in cultivation, as do also *Goodyera pubescens* and *G. repens* and *Cypripedium spectabile*. Mr. Hitchings said he had several times transplanted the *Orchis spectabilis* successfully, and also *Tiarella cordifolia*, and many other native plants. *Liparis liliifolia* is one of the most delicate of the orchids; he has cultivated it in the house for several years, and it blooms every season. *Geranium Robertianum* does well in the house. *Andromeda polifolia* and *Ledum latifolium* are shrubs which succeed well under cultivation. *Kalmia glauca* is handsomer than either of the other species; it is found growing with the two preceding. *Hibiscus Moscheutos* does well in the garden. *Habenaria blephariglottis*, *H. ciliaris*, and *Calypso borealis* have been cultivated by Dr. Walcott. Mr. Hitchings closed by saying that he would like to get young people interested in collecting and cultivating native flowers.

Hon. Marshall P. Wilder expressed much pleasure in having the meeting opened by a lady, and hoped she would be successful in her efforts to inspire others with a love for the cultivation of native plants, that they might enjoy the pursuits in which she took so much pleasure. While we have collected plants from all parts of the world, and agents from all parts of the world have been here to collect our native plants, we have been tardy in cultivating them. The heat, light, soil, etc., wanted by these plants, are the secrets

of nature, which we must learn before we can cultivate them successfully. He was glad to hear the essayist speak of the influence of fashion on the taste for flowers. Some of the most beautiful plants have been fashionable, and afterwards have been obliged to make room for other favorites. Among these is the camellia, of which Mr. Hovey would remember the time when a single flower would bring a dollar, and afterwards it was set aside as coarse, but it is now in favor again. The case is the same with the azalea. He would like to speak of the moral influence of the cultivation of flowers; he hoped when done with the cultivation of flowers on earth, to resume it in a better world.

Rev. A. B. Muzzey said he was much interested in the subject announced for today's discussion. Our native plants have been strangely neglected. When he was in college he took long summer walks in the woods and fields every Saturday with Professor Nuttall, who not only possessed a scientific knowledge of our native flowers, but was full of enthusiasm in their study, and felt all the pleasure of a boy in these excursions. Mr. Muzzey not only collected a herbarium, but brought home plants, which proved capable of house culture. He was amazed at the number and variety of flowers which they found. We have only to go a few miles to find under our feet species we have never seen before. Wild flowers are common, but so is light, and it is a sin against nature to shut it out of our houses; and health, which might otherwise suffer, is promoted by the search for these wild flowers.

Charles M. Hovey expressed much pleasure in having the subject of the cultivation of native flowers brought up for discussion, and congratulated the Committee on their selection. He had been writing on the subject for the last five or six years in "The Garden." When in England a few years ago he visited George F. Wilson's grounds at Weybridge three times—once in March and twice in April. He had been puzzled, when reading in the English magazines about severe frosts, to know how plants could survive them, but he found *Cyclamen hederifolium* and *C. Coum*, with the leaves and flowers frozen quite hard without injury, when the temperature was eight degrees below freezing; and the reason that they were not killed was that the frost was taken out by the atmosphere, under a cloudy sky, before the sun could reach them. After a snow-storm, the cyclamens were just as beautiful as ever. Besides these plants, Mr. Wilson showed him *Hepatica angulosa*, and vari-

ous primroses; among the latter some choice seedlings, covered with bell glasses, and he took more interest in these than in his collection of greenhouse plants. At an exhibition of the London Horticultural Society, one of the most prominent objects was a collection of twenty-four varieties of primroses, — Himalayan and others. The English love all these little plants, but here we want something large and showy, like the sunflower, which is the fashionable flower at Newport. The camellia lost its popularity as much by the peculiarities of trade as from any other cause, and the price fell down to a low rate. When the florists could buy pinks and similar flowers, which would keep several days, they did not think it worth while to purchase the expensive camellia; but this helped to bring roses into fashion. Boston roses have heretofore supplied the New York market. For a long time buyers have been satisfied with Bon Silene and Safrano; but now they want Maréchal Niel, Perle des Jardins, and Gen. Jacqueminot.

Among the native flowers mentioned by the essayist, there are but two or three which the speaker has not described. *Rhexia Virginica*, which was not mentioned, is one of the most desirable. The *Erythronium*, or Dog-tooth Violet, covers the ground in his nursery. The *Asclepias tuberosa*, *Sanguinaria Canadensis*, and *Hibiscus Moscheutos* are easily cultivated, and are among the most desirable native plants. He made botanical excursions in his younger days, influenced by Professor Nuttall, and first found the blood-root in 1829 or 1830; indeed, all these native plants passed through his hands, and he tried to get others to cultivate them. He had studied the botany of the shores of Buzzard's Bay, and found a great variety of plants there, — in the limited space of six acres he found growing one hundred and seventy-five species and varieties. The native asters were not mentioned by the essayist, and have been but little cultivated. *Aster spectabilis* grows about a foot high, and is as beautiful as a Cineraria. Ferns, and the *Mitchella repens*, can be grown in the house, and are really very pretty objects during winter.

William Falconer (of the Cambridge Botanic Garden), did not think our wild flowers, excepting the Lily of the Valley and *Cypripedium spectabile*, were very amenable to winter forcing. Many of them, as violets and hepaticas, make excellent border plants, but they require to be brought slowly into bloom. Speaking of *Cypripediums*, he mentioned that though *C. spectabile* is the one usually

forced, the others are as useful in that direction; in fact, they come earlier into flower. Some orchids, as *Calypso*, although very pretty, are not generally satisactory as out-door garden plants; but, with pot culture, they are first rate. In answer to Mr. Hitchings, he said that *Cypripedium acaule* does well in cultivation for two or three years, but is liable to die out. With reference to Mr. Hovey's remarks about our wild asters, he said that quite a demand has lately arisen in Europe for American asters. He warmly recommended the use of our wild plants as garden flowers, and called attention to the handsome displays of our native lilies in the rhododendron beds of Mr. Sargent, at Brookline, and Mr. Hunnewell, at Wellesley.

Rev. F. L. Capen said that when a boy he used, in driving the cows to pasture, to look out for the columbine and crowfoot. At Jacksonville, Florida, the number and gorgeousness of the wild flowers, is remarkable; he had noticed particularly a flower of a purple color, but otherwise resembling a golden-rod. What we call native flowers are exotics abroad, and our exotics are natives elsewhere. When rare flowers become common the masses will take them. He asked if flowers of the same species were collected and planted together, whether they would not sport and produce new and fine varieties.

Mr. Wilder said that such changes would not properly be called sports, but crosses. Sporting is a change of color of part of the flowers on the same plant, like the Abby Tryphosa Wilder camellia, which originated in a sport on the Mrs. Abby Wilder. The distinction between sports and crosses, or hybrids, is often overlooked. As to species, it is sometimes difficult to say what are species. Once it would have been thought irreverent to attempt to cross genera, but he had crossed the *Lilium lancifolium* with *Gloriosa superba*.

John B. Moore desired to suggest one practical thing, which was to get sweet-brier plants and pot in the spring, and bloom them in the winter. They must have rest, and after growing through the summer, should be placed in a cool cellar till about this time. They should have but little water until they get some leaves; most amateurs injure plants by saturating the soil with water when there are no leaves to evaporate it. If properly treated, the plants will be covered with bunches of bloom, and the fragrance of both flowers and foliage is delightful. The plants are abundant in pastures; young, vigorous ones should be chosen.

Leander Wetherell said that horticulture is the art of improving nature, and it has improved almost every species of plant. Wild flowers are very beautiful; he has often roamed over the woods in search of them, but he thought we have in our gardens what are more beautiful than natives, and that this going back to nature is a retrogression. He alluded to the difficulty of learning plant names, and said that the Society is much indebted to the ladies for the exhibitions of native plants.

J. W. Manning said that he had collected in his nursery four or five hundred varieties of native plants, but had found little demand for them. The *Rhododendron maximum* transplants very easily if small plants are chosen, and the *Kalmia latifolia* also. Mr. Dawson, at the Arnold Arboretum, has been successful in raising both these from seed. The *Kalmia latifolia* is common in the woods, but not much cultivated. It will grow in almost any soil. He knows a dozen plants in gardens in Reading which have been growing for fifteen years.

Mr. Hovey said there are people who will give more for the eglantine or sweet-brier, than for the most improved rose. In Marion, there stands a cedar tree, two hundred and fifty or three hundred years old; it is fifty feet high, and the arms spread fifty feet. He never saw anything that pleased him so much, entirely covered as it was, trunk and branch, with moss; and so we love these wild flowers for their native and ever beautiful and varied forms.

It was announced that on the next Saturday, John Robinson, Professor of Botany and Vegetable Physiology to the Society, would read a paper on "Ornamental Arboriculture."

BUSINESS MEETING.

SATURDAY, December 24, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

John B. Moore, from the Committee on Publication and Discussion, presented the following vote:

Voted, That there be offered a Prospective Prize of Fifty Dollars

for the best Essay on the Effect of Chemical Fertilizers on Fruits and Plants, as influencing their growth and quality, the essay to give a detailed account of actual experiments and results, during the next three years; the prize to be awarded at the end of the year 1884.

The vote was referred to the Executive Committee.

Adjourned to Saturday, December 31.

MEETING FOR DISCUSSION.

This was opened by the reading of the following paper, by the Professor of Botany and Vegetable Physiology:

Essay on Ornamental Arboriculture.

By John Robinson, of Salem.

In attempting to sketch the history of ornamental arboriculture in this country, it soon becomes evident that the subject will be exhausted for want of actual examples, rather than for lack of records of what has been accomplished. It is only necessary to read the works of Downing, or the articles in the early horticultural magazines, to discover that ornamental tree culture received little attention in New England, compared with that bestowed upon it in the vicinity of Philadelphia, or along the valley of the Hudson. This may, in a great measure, be attributed to the fact that the early horticulturists of this neighborhood, the founders of the Massachusetts Horticultural Society, were chiefly interested in the cultivation of fruits and flowers. In organizing this Society, they formed the horticultural centre of New England, whose steadily increasing influence has given the key-note to the horticulture of this region. We find, therefore, established near Boston, a spirit of competition in fine fruits and rare flowers, to the exclusion, until very recently, of any attempts to learn the secrets of tree culture.

The cultivation of ornamental trees has, of course, received occasional attention in individual cases for more than two centuries, as the magnificent shade trees in the streets of some of our oldest towns, notably those in the valley of the Connecticut river, bear testimony, as well as those upon a few private estates.

The first landscape gardener to issue a special catalogue of hardy trees and shrubs suitable for our climate, was André Parmentier, of Brooklyn, L. I. He also established a scientifically arranged garden, and was the first in the United States to form a plantation illustrating the natural style of laying out grounds. At the opening of the present century, among the prominent estates where tree culture had received special attention, were Woodlands, the residence of William Hamilton, near Philadelphia; Clermont, the Hudson River estate of Chancellor Livingston, and Waltham House, near Boston, the residence of Hon. Theodore Lyman. A little later in this vicinity, the estates of Thomas Perkins and Thomas Lee, in Brookline, and John P. Cushing, of Watertown, were noticeable.

Recently, arboriculturists here have fallen into a rather too servile imitation of European examples, with the use of European trees or plants, better suited to the climate of Europe than to our own, where experiments should be based upon a careful study of trees and methods better adapted to our climate and soil.

To make a plantation which shall contain a desirable variety of trees, adapted to the situation in which they are to grow, and calculated to remain a lasting benefit, requires a knowledge of physical geography, especially that which relates to the influence of climates upon plant life. Modern science teaches us that nature has, in the countless ages of time, evolved for each and every climate a class of plants especially adapted to the influences by which they are surrounded. She has, in particular instances, by gradual and imperceptible changes, adapted groups of individuals of a species to flourish in a climate differing totally from that in which other individuals of the same species are found. Hence, individuals taken from one locality may be perfectly hardy, while other individuals of the same species, from other localities, fail utterly to endure our climate. For example, the small leaved magnolia, taken from Massachusetts or the Middle States, is perfectly hardy here, while plants of the same species brought from Florida, would not survive a single Massachusetts winter.

Under the present theory of the distribution of species, based upon a careful study of geology, our existing flora is considered, with a few rare exceptions, to have been disseminated from a common centre at the north, and to be the result of the inexorable law of the survival of the fittest species or individuals for the places

they were forced to occupy. It is useless, therefore, to attempt to remove a plant from a climate to which its ancestors have, for ages of time, become inured, and expect it to thrive in a different one. We should not give a moment's thought to a proposition to plant the *Victoria regia* of the Amazon, in the pond on Boston Common; yet, with the trees, attempts hardly less absurd have been persisted in, simply because the climatic conditions of the regions from which it has been attempted to introduce them, were not studied; the latitude from which they were taken, only being considered.

A glance at a map of the northern hemisphere, shows us that the configuration of the east coast of the continent of Asia is quite similar to that of eastern North America, and that in the Pacific ocean, as well as in the Atlantic, a warm ocean current, commencing at the southwest, and flowing across the ocean, disappears at the northeast. Therefore, the coast climate of one continent may be expected to closely resemble the corresponding coast climate of the other, which, in point of fact, it does; the climate of northeastern Asia, resembling that of New England and eastern North America, while that of California and Oregon is not unlike the climate of western Europe. There are also, in various portions of the globe, certain conditions which tend to produce local climates quite different from the surrounding regions, and, in some respects, not unlike our own. Some such districts are already known to us, and others may yet be discovered.

Working upon these facts, we may arrange in order the regions from which we are obliged to select trees for cultivation in New England, and beyond which, unless in rare, exceptional cases, it is useless to go to add to our collections.

This order is as follows:

I. The Alleghanian region of North America, which includes New England and Canada, and extends southward to the mountains of northern Georgia and Alabama, and broadly to the eastern base of the Rocky Mountains.

II. The eastern coast of Asia, north of about latitude 38, and including northern China, Manchooria, and northern Japan.

III. Regions with climates not sufficiently differing from that of New England to interfere with the adaptability of the plants of such regions to our climate. The Central Rocky Mountain region, portions of Siberia, the Caucasus, Toorkistan, and possibly Thibet, are illustrations.

IV. To the plants from the regions already indicated may be added certain cosmopolitan species, which inhabit widely different localities and seem to flourish everywhere in the old world.

To the first of these regions, the Alleghanian, too much attention cannot be paid, for here, in a comparatively limited area, is found a more extensive collection, in number of species, of desirable forest trees than is furnished by any region of similar size in the temperate zone, with the possible exception of Japan. There are more species than is possessed by the whole continent of Europe. Neither do the trees from this region require to be experimented with to ascertain their fitness for cultivation in our grounds, for they are of our own flora. But before entering upon the southern Alleghany mountain region, where there are many species not natives of New England, we need go no farther than our own woods to find many of the most desirable trees to plant for ornament; trees which in Europe have been eagerly sought for two centuries as great prizes, but which, in our own country, have been too long neglected for general planting. What tree is more desirable, in every way, than the Sugar Maple? or for single specimens more interesting than the Hickory? Our Oaks rank among the most magnificent trees in the temperate zone, while the Tupelo, Beech, Sassafras, Hornbeam, the Birches, and the Ashes, among the deciduous trees, and the White and Red Pines and Hemlock, among the evergreens, are all valuable trees for ornamental purposes. To these may be added from among the lower growing species, the Hamamelis with its November flowers; the gorgeously fruited Sumachs; the Amelanchier, too often overlooked; the Dogwoods, including the conspicuous *Cornus florida*, and the Viburnums. All these grow naturally within twenty miles of this spot. There are, besides, in the immediate neighborhood, a number of trees, which, although not suited for all soils and situations, are, nevertheless, adapted to certain localities. Among such are the American Elm which flourishes best in the alluvial river meadows, and the true White Cedar of the low swampy lands.

As previously stated, one of the greatest storehouses for tree species in the temperate zone is the region of the southern Alleghany mountains. In Pennsylvania and the mountains southward are nearly two-score of trees, which, although belonging to the same flora as our own, are not natives of Massachusetts, but are certain to succeed in our ornamental plantations.

There are five species of Magnolia, most of which are considered as rare trees in cultivation. We have the Buckeyes—the red and yellow flowered larger species, and the white flowered shrubby one; the Cladrastis or Yellow-wood, fine specimens of which are now to be seen on many of the older estates in this vicinity, and one magnificent specimen at the Botanic Garden, Cambridge, over thirty feet high, with a trunk two feet in diameter. There is the Red-bud, which, with its prodigality of deep pink flowers, presents in spring a most beautiful appearance. Among the plants of the Rose family are two species of Cratægus, one somewhat resembling the scarlet thorn; and the American Crab apple, desirable for its fragrant flowers and marketable fruit. We have the *Viburnum prunifolium*, resembling our Sheep-berry, but a larger growing tree; the *Halesia* or Silver-bell tree; and the Persimmon, whose fruit ripens in this vicinity and should be added to our garden products, and find the place it deserves upon the exhibition tables of this Society. The Virginia Fringe tree, although frequently seen in cultivation, should be more extensively planted, and the Winged and Slippery Elms and the Chinquapin are not so often seen as they deserve to be. Of the Oaks there are a large variety. Besides the eight species more or less common in the woods of this vicinity, there are five others which may be added from the region a little south of us, that are now seldom met with in cultivation here, which differ in foliage and in fruit strikingly from our native species. Among them are the Willow oak, the Pin oak, and the Burr or Over-cup oak. This last species is likely to prove the rival of the White oak in the value of its wood for mechanical purposes, on account of its durability in exposed situations, where it resists decay seemingly longer than that of any other species. Among the conifers are the Table Mountain Pine and the Bald Cypress, both of which are perfectly hardy. To this list may, probably, be added a newly discovered Hemlock, with larger cones and longer leaves than our own, known as *Tsuga Caroliniana*, and the *Rhus cotinoides* (somewhat resembling the European Smoke tree) which has been lately rediscovered in the mountains of Alabama. From the west of this region, and yet within the limits of its flora, are the *Fraxinus quadrangulata* (Blue Ash) of Michigan, a beautiful forest tree with valuable timber, and the Western Catalpa, but recently distinguished from the southern species with which it has been confused. This

last adds to our collections, without doubt, a tree at once beautiful as an ornament, and of great value on account of its almost imperishable timber. There are also at the west the *Ulmus racemosa*, and *Carya sulcata* or Western Shag-bark Hickory, both fine trees. At the north are the Gray Pine and White Spruce, the latter one of the best of its class that we can cultivate.

Were we to stop here our choice could not be considered as a limited one, for the trees of this, our own flora, are unequalled in the temperate climate for their variety, their striking beauty, and their lasting effect for cultivation in parks, lawns, or streets, where, the work of planting once accomplished, it is important that it should last, perhaps, for centuries. It is now a matter of general knowledge that we are indebted to native trees for the beautiful effects of autumnal foliage, while those of foreign introduction are but dull and sombre when our native species are in their most gorgeous raiment. This alone is no inconsiderable argument in favor of our native trees.

The second region to which we may look with the expectation of adding extensively to our collections will be, as indicated previously, Manchooria, Northern China, and Northern Japan.

There are already in cultivation from these countries a great many valuable ornamental plants, but still more may be added. Among those familiar to us from China and Manchooria, are the Wistaria, Deutzia, and Weigela, all of which are now widely distributed in our gardens, as is also, though perhaps less extensively, the *Magnolia conspicua*. Of the trees from this region, which are likely to find their way into general cultivation as they become more accessible, are several species and garden varieties of Magnolia, a Tulip tree, the *Phellodendron Amurense*, the Chinese Tamarix, a much finer and later flowering species than the European tree, which is commonly met with in cultivation; a Linden, a Horse Chestnut, and several Maples, one of which, a variety of *Acer Tartaricum*, bears deliciously fragrant blossoms. There is also the *Cladrastis Amurensis*, a relative of our well known Yellow-wood; a Honey Locust, a Gymnocladus resembling the corresponding American species, a Hawthorn, two Plums, an Ash, two Birches; a Pterocarya, which may be described as a relative of our Hickories; besides an Oak and the Manchoorian Walnut. These are all deciduous trees. Among the conifers are the Taxodium, occasionally met with here under the name of Glyptostrobus; the Chinese

Juniper, which much resembles our own Red Cedar; the Pseudolarix, a curious relative of the larch; and two Pines, one of which, *Pinus Bungeana*, common in the vicinity of Peking, is at once recognized by its white bark. To the west of this region, in Siberia, are the Caragana, an Elm, and *Picea obovata*, all of which are desirable trees for cultivation here.

Japan, however, can probably furnish more desirable trees for New England ornamental plantations than even the continent of Asia. Already there are many species both of woody and herbaceous plants in quite general cultivation from that country. Among the Japanese trees now known to succeed perfectly here, are several maples, including the well-named species, *Acer polymorphum*. This little tree has already won the admiration it deserves, and is rapidly finding its way into our collections in numerous varieties, some of which, when judged by the standard of beauty and their ability to withstand the hot summer sun, are much more desirable than others. Nearly allied to the maple is the *Negundo cissifolium*, and also, thoroughly tested, are the Sophora, and the curiously fruited, yellow flowered Kœlreuteria. Two Apples and the Idesia are perfectly hardy, and there may also be added a Chestnut, a Walnut, and an Alder, which have proved satisfactory, besides the *Phellodendron Japonicum*, the Zelkowa, an Ash, two Birches, and more than one Oak, which, although no doubt exists regarding their hardiness, have not yet been in cultivation here long enough to be considered as tested. Among the Japanese conifers we find an unusually large number suitable for our purposes—far more than can be obtained in any other region. Of the Pines there are three desirable species; one, the *Pinus densiflora*, has been introduced under the name of *Pinus Massoniana*, which belongs to a more southern Chinese species, not, probably, hardy with us. There are two Spruces, a Hemlock closely resembling our own, a Larch, and the Umbrella Pine (*Sciadopitys*), already thoroughly tested here. We have, besides, a long list of Retinosporas which some recent authors have placed under the old genus, Thuja. They are more nearly related to our true white cedar than any other New England species. Many of the varieties of the Retinosporas, of which there are a great number in cultivation, are very graceful and interesting plants. Of the permanency of these varieties not much can be said. Actual observation proves many of them to be but juvenile forms of well known species, which, as they grow older,

change their characters and take the normal forms. Carrière, a French writer on the Coniferæ, has happily called them the "larval forms" of the mature plants. All the Retinosporas of our gardens may probably be referred to two or three typical species, although some of the varieties may prove more permanent than others.

The cultivation of ornamental plants has been practiced in Asiatic countries for a great length of time, and, hence more garden varieties may be expected from this region than from almost any other. In fact, with many plants from these countries, it is often difficult to determine what is the typical form of the species, or its original habitat.

Of the Asiatic conifers, the Gingko has probably been cultivated here longer than any other species, the tree on Boston Common, being, at least, fifty years old. It has usually been considered a native of Japan, but, recently, this has been doubted. Dr. Masters, in a paper "On the Conifers of Japan" (Linn Soc. Jour., Bot., Vol. XVIII., read Dec. 2, 1880), says, in reference to the distribution of species: —

"Before leaving the subject of the distribution of Japanese Conifers, a word may be said as to the occurrence of certain trees (often of peculiar organization), in the immediate vicinity of the temples in Japan, China, Thibet, etc. In some of these cases, the trees are not known in a wild state, the aboriginal stocks being either extinct or lurking in some of the all but unknown districts of the Chinese Empire, Thibet, or Central Asia. Among such may be mentioned, as worthy the attention of students of Buddhist lore: *Cupressus funebris* (China, Sikkim), *Abies Fortunei* (China), *Abies Kœmpferi* (China), *Cryptomeria Japonica*, *Sciadopitys verticillata*, *Gingko biloba*, and certain species of *Pinus*."

The regions thus far considered, are the ones, and the only ones from which we may add extensively to our collections. Among the regions, where a few additional species may be found—in some cases very valuable ones—is the Rocky Mountain region of Colorado. Here many species of the Pacific flora flourish in company with eastern species, and hence, this region may be considered as the common meeting ground of the Atlantic and Pacific floras.

From this region have come two of our most desirable ornamental trees. These are the Blue Rocky Mountain Spruce and the

Douglas Fir. The Blue Spruce has been fairly tested here and proves perfectly hardy. There are several specimens in the vicinity of Boston which have reached the height of fifteen feet, retaining a beautifully compact form. Individual specimens vary much in color, from a dark green to the striking glaucous blue, so much admired in many specimens. This tree is known most frequently by the incorrect name of *Abies Menziesii*, hastily given it by Colorado botanists. It should be known as *Picea pungens*. The Douglas Fir is scarcely less beautiful, and is quite as hardy, having been tested here equally long. From an economic point of view — a side of the question which should not be lost sight of even in cultivating trees for ornament, — the Douglas Fir is one of the most valuable trees now existing in North America, and may in the future occupy the place likely soon to be vacated by our native pines and spruces; when, if forest culture is systematically conducted in Massachusetts, it will be a source of much profit to our people. From this Colorado region also, have been introduced, with success, a Hawthorn, a Poplar, the White Fir (*Abies concolor*), *Pinus flexilis*, *Pinus ponderosa*, and *Picea Engelmannii*, the latter resembling, but distinct from, the Blue Spruce (*Picea pungens*), and not unlike our northern White Spruce. There are, also, not often cultivated here, a Pine, a Larch, and a Spruce. The Pine (*Pinus contorta* var. *Murrayana*) has withstood the winters of late at the Arnold Arboretum, in good condition.

The plants introduced from this region possess a remarkable interest, and establish beyond a doubt the value of experimental stations where scientific tests may be applied to tree culture. As has been suggested in a previous essay, the plants raised from the seeds of certain Colorado trees prove perfectly hardy here in New England, while those raised from the seeds of the same species of tree collected in the milder, moister climate of the Pacific slope have failed to endure our climate, but flourish perfectly in England, where most of the trees from the Pacific slope find themselves at home, thus proving by actual experiment the analogy between the climate of the northwestern United States and that of western Europe.

Again, turning to the eastern hemisphere, among the regions from which we may hope to add plants for cultivation here, is a portion of Toorkistan, from whence, already, an Ash has been obtained. From Thibet, the *Pinus Gerardiana* promises to prove

hardy, and similar results may be expected from some trees in portions of the Himalaya mountains. From the region of the Caucasus, we have still more species—a Maple, the *Zelkowa crenata*, the *Pterocarya fraxinifolia*, a fine specimen of which stands in the Botanic Garden at Cambridge; the *Carpinus Duanensis*, long cultivated here, though not extensively; and among the conifers, *Abies Cilicica*, *Abies Nordmanniana*, and *Picea orientalis*. Of the last two species, specimens may be seen on some estates near Boston, fifteen feet high, and of fine appearance. From the Balkan mountains of Roumelia, which is now considered its original home, though it was introduced here by way of Europe, we have the Horse Chestnut. This tree in proper situations, possesses a stateliness unequalled by any other, and its magnificent show of blossoms in the month of May, never fails to attract attention.

As it is said that "the exceptions prove the rule," we resort to the exceptional species from regions, whence it is generally useless to attempt to introduce trees with the prospect of satisfactory results. There are certain species of trees whose geographical range is of such wide extent that they seem to have acquired a special power to adapt themselves to different climates. Among such are the White Willow and the European Elm. Both of these trees are familiar objects to us, having been brought here by the early colonists as reminders of their old homes. The European elm proves, for city streets, superior to the American species, which has unfortunately been selected as the one American tree for constant service. The American elm, although of surpassing beauty in a moist alluvial soil and with abundant space, is usually planted in dry soil, where it does not flourish, and its drooping branches make it generally unsuitable for narrow streets, where it is frequently seen. The English elm, however, is more erect in habit, retains its foliage longer in the autumn, and withstands the smoky and dusty atmosphere of our cities far better than the American species. The European should, wherever possible, replace the American elm in our city streets. The European Larch is another tree of this class. Growing naturally in a dryer soil, it is much more suitable for our gravelly hills than the meagre foliaged American tree, which finds its home in low, wet grounds. The Norway Maple, too, in situations near the ocean, may, perhaps, be considered the most desirable among the foreign maples for general cultivation, and the conspicuous yellow blossoms, coming before the leaves appear, give an additional value to the tree.

The Turkey Oak, *Fraxinus ornus*, *Tilia argentea*, and *Acer campestre*, may be added, as desirable, and also *Carpinus Betulus* and *Salix laurifolia*, and, perhaps, also *Tilia dasystylis* and *Quercus Pannonica*, but the last two are not fairly tested. Among the Conifers which may receive mention here, is *Thuja Wareana*, usually called Siberian Arbor Vitæ, and considered a native of Europe. It is, in reality, a seedling variety of our own New England *Thuja occidentalis*. From its preference for drier soils, it is much better adapted for cultivation than the typical form, which flourishes only in wet or low grounds, and is of little service in ordinary plantations. From the Pacific slope, we have as exceptions, the *Rhamnus Purshiana*, well known in medicine; the Vine maple; and, possibly as serviceable in favorable situations, a Hawthorn, a Crab apple, a Poplar, *Abies amabilis*, *Abies nobilis*, and *Picea Sitchensis*, but these need a more extended test.

But here we should stop, where it is most usual to begin, with the ordinary European trees. To those unfamiliar with the history of American arboriculture, it can but seem strange that, with the largest supply of the most beautiful forest trees directly under our hands, most of our older estates are filled with European trees, many of which are totally unfit for cultivation in our climate, and are in every way unworthy to be placed beside their American congeners. Among the European trees most common in cultivation, is the Sycamore Maple, specimens of which, at fifty years of age, are worthless. The other European maple, the Norway, is, however, suitable for certain situations, as already stated. Neither of them are so beautiful as our Sugar Maple, and even the White and the Red Maples hold their own against them in favorable soils. The European Mountain Ash, more frequently seen in cultivation than either of the American species, seldom matures, except in a miserable condition, and the European Linden possesses but one advantage over our own, that of having more fragrant blossoms, while the American tree is otherwise its superior. The European Ash cannot claim to even equal the American White Ash, either as an ornamental or as a useful tree, and neither the European Beech nor the Birch compares, in cultivation here, with the corresponding American species. Our Chestnut is superior to its Old World relative, and the Black Walnut, or even the Butternut, is far better for us than the Walnut of Europe. The English Oak fails here in less than fifty years, when it should be hale and hearty at

a thousand. Probably no European tree has been more extensively introduced into cultivation than the Norway Spruce, for ornament as specimen trees, for wind-breaks, and for hedges, and yet New England possesses, in the White Spruce of the northern forests, a tree every way its superior; or, were it possible to replace the Norway by the Blue Rocky Mountain Spruce, which is suited for all purposes, the improvement would be great indeed. The same comparisons may be made in favor of the American Pines. The White Pine far surpasses either the Austrian or the Scotch Pine as an ornamental and useful tree. The Red Pine, which is even now found growing naturally in Massachusetts, while it resembles the Austrian Pine somewhat in appearance in the young state, is just beginning its maturer life when the Austrian Pine is failing, as it almost always does in the course of thirty years. The common Pitch Pine, often overlooked, is for us a much more valuable tree for planting in a sandy soil, than either of the European species. Why is it, then, that we have been as it were, loaded down with a mass of unsuitable material, often rendering the labors of earnest arboriculturists of the last generation a waste? Why is it that, with a vast storehouse of trees, in every way adapted to our wants, and directly at hand, we have persistently planted valueless species to the exclusion of the nearer and better ones? It is partly our misfortune and partly our fault. We have been too easily satisfied to follow foreign taste, use foreign trees, and study foreign books. Scientific arboriculture here has received little or no attention. These are our faults. Our misfortune is that we have not had in New England an Andrew J. Downing to influence the taste for arboriculture, and to guide it in its proper channels. Had we been so fortunate, his influence could not have failed to produce a marked effect here, as Downing's has done in the region where he lived and wrote. Our nurserymen should realize the great importance of the position that they hold in the community, and the vast influence, if used in the right direction, they have upon the future taste for trees and the results of tree planting. In selecting ornamental trees the purchaser is entirely dependent upon the nurseryman, for a knowledge of the proper species. It is, therefore, very important that those who deal in trees should possess a fair knowledge of scientific arboriculture, in order to form a correct judgment in recommending trees for various situations, and to be of real service to the purchaser, who, in most cases,

knows nothing whatever of the subject. Good courses of reading and lectures upon structural and physiological botany cannot be too strongly recommended for those who intend making the raising or dealing in trees their business; a careful study of the applicable portions of such works as Marsh's "Man and Nature" and Gray's "Structural Botany," will be a valuable addition to the practical knowledge gained in the field.

It is a common error to suppose that by what is popularly known as acclimation, almost any plant may be made to flourish in a climate where it does not naturally grow, if it only can be inured gradually enough to the change. This theory has been proved false by actual experiments. It is not, therefore, by habituating to our climate plants from regions differing totally in climate from our own, that we should expect to add to our collections; but by carefully studying the climatic conditions of all countries, and selecting, from such regions as seem to possess a climate resembling ours, plants which we can cultivate here with the prospect of success. Until recently there has been no authoritative source of correct information to guide in the selection of trees for our ornamental collections. Horticulturists during the past hundred years, or even more, have experimented almost at random with a large number of species, and for what is now known of the subject we are indebted to the enthusiasm of the pioneers of horticulture in this part of the country. But something more is needed in a country like ours, where large estates seldom remain intact for more than one or two generations, and where the demands for business purposes require us to surrender today the land which, but a few years ago, was considered quite beyond their reach. It is therefore necessary that experiments, sufficiently continued to give them the highest value, should be carried on by institutions permanently established, where the work inaugurated by one generation shall be steadily forwarded by the next; for in the study of arboriculture, where definite results may not be reached for a century, patient labor and carefully recorded observations must always be the work of the student. We cannot, therefore, too highly estimate the value of the work contemplated by Harvard College in establishing the Arnold Arboretum. In 1874, a tract of land on the Bussey estate in West Roxbury, near Boston, was set apart by the college for the purposes of an arboretum. A collection of living plants was at once commenced, both of native species and

of those from other portions of the temperate zone. By a system of exchanges with institutions of similar character in other parts of the world the collection was rapidly augmented, so that at the present time it contains a larger number of species and varieties of hardy trees and shrubs than any other collection in this country. Experiments have been tried and are still continued with plants and seeds from regions where the climate is at all similar to our own, and even where in some cases local conditions of climate suggest the possibility of obtaining for cultivation here (as in the case of the Douglas Fir) individuals of a species which generally inhabits a very different climate, and one from which we should not expect to introduce plants with success. Although much has already been accomplished, a work so great as that contemplated must be considered as largely in the future, and as even a commencement of the final arrangements has been delayed on account of certain plans now under consideration by the College and the city of Boston, the collection of living plants is still in the form of a nursery, and no scientific arrangement has as yet been begun. It is intended as soon as practicable to plant along the roadways the species of trees and shrubs, both native and foreign, in the order of their botanical sequence, and to have them so grouped that the plants of one family will be together and readily studied. All the varieties, too, of a species will find their appropriate places in the systematic order, that the visitor may acquaint himself with their position, and readily compare them with the species from which they are supposed to have been derived. By this arrangement it will at once be seen what species and varieties are most worthy of cultivation, and in what countries or portions of countries the plants best adapted to our wants are found. Those which prove failures will also be pointed out, that we may know what to avoid in making our selections. In other portions of the grounds it is intended to illustrate the methods of making artificial forests, and the different ways of planting trees for economic and ornamental purposes. A museum and herbarium for the benefit of those who are studying ligneous plants scientifically, or who may desire to name specimens or to select plants for horticultural purposes, has been commenced. This collection has already become quite extensive, and besides a very good herbarium of the woody plants of the temperate zone, includes specimens of the wood of nearly all the North American forest

trees, together with a large number of foreign species. It is intended to include in the collection everything relating to trees and forests that will illustrate the subject botanically or horticulturally. With these objects constantly in view, the Arboretum, with its collections now existing, and those which will inevitably follow, offers to all who desire to study the trees, whether scientifically or in their horticultural or economic aspects, such an opportunity as until now never has been given our people. The Arboretum is so situated, that the experiments conducted there will not only be of great value to this portion of New England, but will apply to a large part of the whole country as well.

Arboriculture is indebted to horticulture for the production of many valuable garden varieties of trees. The magnificent variety of Rhododendrons and Azaleas, and the hybrid Magnolias and other plants, attest the zeal and success of enlightened horticulturists, and by the preservation of such natural sports as the Purple Beech and some of the cut-leaved Birches and Maples, as well as the finer sorts of weeping trees, horticulturists have contributed many valuable additions to our ornamental collections. But there is a tendency to overdo this as well as other branches of gardening, and we find the absurd practice too much in vogue, of saving and perpetuating many monstrosities which should never receive a place in any collection. There are long lists of golden-leaved, cut-leaved, and blotched-leaved varieties, which are but diseased and short lived abnormal conditions and arrested growths of healthier plants, and are wholly unworthy of preservation. Nor can much more that is favorable be said of the many so-called "inverted" varieties of hardy trees. This fashion is as unhealthy as the plants themselves, and should be as short lived.

If one-tenth the energy which is devoted to the propagation of such plants were given to the study of climate, and the introduction of new species, our gardens and plantations would better illustrate the advances that modern science has made in botanical geography and the knowledge of plant life. Nor is it enough to select and secure proper trees for our plantations; it is as necessary to properly care for them as to plant them. Too little attention is paid to the proper thinning and pruning of our trees. It is a subject little understood or practised here, although in Europe its importance has long been recognized, and pruning forms an important part of the arboriculturist's duty. The want of proper

pruning and care is especially noticeable in our city and roadside trees. They are too often left to themselves, or else mutilated in rude attempts at unscientific pruning. To supply information on this important subject, the Massachusetts Society for Promoting Agriculture has recently caused to be translated from the French, a treatise from the pen of the Count des Cars; a work which has passed through many editions in France, and which is of great practical value. It should be in the hands of every one who has charge of trees, or is interested to see them properly managed. Could Mons. des Cars's directions be followed, the trees on Boston Common, and in the parks and streets of our cities, would present a very different appearance, and their chances for long life and greater beauty would be immensely increased.

The science of arboriculture is in its infancy here, but under the influence that might be exercised by such institutions as the Arnold Arboretum and this Society, it should not long remain so. The subject is one of vast importance, and, whether considered scientifically, horticulturally, or from its economic aspects, should receive earnest consideration; and there is, perhaps, no better way of calling the attention of the community to it than by first making trees attractive in ornamental plantations. One of the most experienced and scientific horticulturists, whose name is known wherever the study of plants is pursued, has said: "It is the duty of our enlightened community to plant trees, and to so care for them that posterity shall not suffer; a duty, unfortunately, too little regarded in our day."

Appendix.

List of Trees which may be used for Ornamental Plantations in the Northern United States, arranged under the regions indicated above.

Such as have not been thoroughly tested, but which may be expected to succeed, are marked by an asterisk.

I. Appalachian, or Atlantic American.

Magnolia acuminata (Cucumber tree).
" cordata.
" Fraseri.
" glauca (Sweet Bay).
" macrophylla.
" Umbrella (Umbrella tree).

Liriodendron Tulipifera (Tulip tree).
Tilia Americana (Basswood, Linden).
* " heterophylla (Southern Linden).
Æsculus flava (Sweet Buckeye).
" glabra (Ohio Buckeye).
" Pavia.
Acer dasycarpum (White or Silver Maple).
" Pennsylvanicum (Striped Maple).
" rubrum (Red or Swamp Maple).
" saccharinum (Sugar Maple).
" " *var.* nigrum (Black Maple).
" spicatum (Mountain Maple).
Negundo aceroides (Box Elder).
Rhus typhina (Stag-horn Sumach).
" glabra.
* " cotinoides.
" copallina.
Robinia Pseudacacia (Locust).
" viscosa (Clammy Locust).
Cladrastis tinctoria (Yellow-wood).
Gymnocladus Canadensis (Kentucky Coffee tree).
Cercis Canadensis (Red-bud).
Gleditschia triacanthos (Honey Locust, Three-thorned Acacia).
Prunus Americana (Canada Plum).
" Pennsylvanica (Bird Cherry).
" serotina (Black Cherry).
Pirus Americana (American Mountain Ash).
" sambucifolia.
" coronaria (American Crab Apple).
" angustifolia.
Cratægus cordata (Washington Thorn).
" Crus-galli (Cockspur Thorn).
" coccinea (Scarlet-fruited Thorn).
" sub-villosa (from the Valley of the Mississippi).
" tomentosa (Black Thorn).
Amelanchier Canadensis (June-berry).
Cornus florida (Flowering Dogwood).
Nyssa multiflora (Tupelo).
Viburnum Lentago (Sheep-berry).

Viburnum prunifolium (Black Haw).
" alternifolium.
Oxydendrum arboreum (Sorrel tree).
Kalmia latifolia (Laurel).
Rhododendron maximum (Great Laurel).
Diospyros Virginiana (Persimmon).
Halesia tetraptera (Silver-bell tree).
Fraxinus Americana (White Ash).
" pubescens (Red Ash).
" quadrangulata (from Michigan, etc.).
" sambucifolia (Black Ash).
" viridis.
Chionanthus Virginica (Fringe tree).
Catalpa bignonioides.
" speciosa (Western Catalpa).
Sassafras officinale.
*Ulmus alata (Winged Elm).
" Americana (White Elm).
" fulva (Slippery Elm).
" racemosa (Rock Elm, from the Western States).
Celtis occidentalis (Nettle tree).
Morus rubra (Red Mulberry).
Maclura aurantiaca (Osage orange).
Platanus occidentalis (Buttonwood).
Juglans cinerea (Butter-nut).
" nigra (Black Walnut).
Carya alba (Shag-bark Hickory).
" sulcata (Western Hickory).
" amara (Bitter-nut Hickory).
" porcina (Pig-nut Hickory).
" tomentosa (White-heart Hickory).
Quercus alba (White Oak).
" bicolor (Swamp White Oak).
" coccinea (Scarlet Oak).
* " heterophylla (from New Jersey, Delaware, etc.).
" imbricaria (Shingle Oak).
" macrocarpa (Over-cup Oak, Burr Oak).
" Muhlenbergii (Chestnut Oak).
" palustris (Pin Oak).
" Phellos (Willow Oak).

Quercus Prinus (Rock Chestnut Oak).
" rubra (Red Oak).
" stellata (Post Oak).
" tinctoria (Yellow-barked Oak).
Castanea vulgaris, *var.* Americana (Chestnut).
" pumila (Chinquapin).
Fagus ferruginea (Beech).
Ostrya Virginica (Hop Hornbeam).
Carpinus Caroliniana (Blue Beech, Iron Wood).
Betula alba, *var.* populifolia (White or Gray Birch).
" lenta (Black or Sweet Birch).
" lutea (Yellow Birch).
" nigra (Red or River Birch).
" papyracea (Paper or Canoe Birch).
Alnus incana (Speckled Alder).
" serrulata (Blunt leaved Alder).
Salix nigra (Black Willow).
" cordata (Heart-leaved Willow).
" lucida (Shining Willow).
Populus balsamifera.
" " *var.* candicans (Balm of Gilead).
" grandidentata (Large-toothed Aspen).
" tremuloides (American Aspen).
" monilifera (Necklace Poplar).
Juniperus Virginiana (Red Cedar).
Chamæcyparis sphæroidea (White Cedar).
Thuja occidentalis (Arbor Vitæ).
Taxodium distichum (Bald Cypress).
Abies balsamea (Balsam Fir).
Tsuga Canadensis (Hemlock).
* " Caroliniana (from North Carolina, etc.).
Picea alba (White Spruce).
" nigra (Black Spruce).
Larix Americana (American Larch).
Pinus Banksiana (Gray Pine).
" resinosa (Red Pine).
" pungens (Table Mountain Pine).
" rigida (Pitch Pine).
" Strobus (White Pine).
" inops (Jersey Scrub Pine).

II. Northeastern Asia.

A. China and Manchooria.

Magnolia conspicua (Yulan).
" stellata.
" (garden hybrids and varieties).
Liriodendron (species from Northern China).
Phellodendron Amurense.
Tamarix Chinensis (Chinese Tamarisk).
*Tilia Mandshurica (Manchoorian Linden).
*Æsculus Chinensis (Chinese Horse Chestnut).
*Acer Mono.
" Tartaricum.
" " *var.* Ginnala (Fragrant Maple).
Cladrastis Amurensis.
Gleditschia ferox (Thorny Honey Locust).
*Gymnocladus Chinensis (Chinese Coffee tree).
Cratægus orientalis.
Prunus Maacii.
* " Mume.
Cedrela Chinensis.
*Fraxinus Mandshurica (Manchoorian Ash).
*Pterocarya stenoptera.
*Quercus Mongolica.
*Betula Ermani.
* " ulmifolia (Elm-leaved Birch).
Juglans Mandshurica (Manchoorian Walnut).
Taxodium heterophyllum (Glyptostrobus).
Pinus Bungeana (White-barked Pine).
" Mandshurica.
Juniperus Chinensis.
Pseudolarix Kæmpferi.

B. Japan.

Tilia cordata.
*Acer cratægifolium (Hawthorn-leaved Maple).
* " mieranthum.
" polymorphum (including some varieties).
" rufinerve.
" Japonicum.

*Acer Sieboldianum.
" pictum.
* " truncatum.
* " trifidum.
* " diabolicum.
* " circumlobatum.
* " Buergerianum.
" palmatum.
" capillipes.
" carpinifolium.
* " distylum.
* " argutum.
* " pycnanthum.
* " sessilifolium.
* " Nikoense.
Negundo cissifolium.
Rhus semi-alata. (R. Osbeckii of authors).
*Phellodendron Japonicum.
Gleditschia Japonica.
Cercis Chinensis (C. Japonica of gardens).
Sophora Japonica.
Pirus Toringo.
* " tomentosa.
* " præcox.
" spectabilis.
Kœlreuteria Japonica.
*Zelkowa Keaki.
" stipulacea.
Idesia polycarpa.
Rhododendron (species and garden varieties).
*Fraxinus longicuspis.
* " obovata.
* " pubinervis.
*Platycarpa strobilacea.
Ulmus parvifolia.
Morus alba.
*Pterocarya rhoifolia.
Juglans Sieboldii (Japanese Walnut).
* " cordiformis.

*Quercus glabra.
* " dentata.
* " serrata.
* " cuspidata.
*Fagus Sieboldii.
Castanea Japonica.
*Betula Bhojpattra.
* " coryifolia.
* " Maximowicziana.
*Carpinus Japonica.
* " laxiflora.
* " erosa.
* " cordata.
Alnus Japonica.
*Thuja dolabrata.
* " Japonica.
* " orientalis.
" " *var.* pendula.
Chamæcyparis (Retinospora) pisifera.
" " " *var.* squarrosa.
" " " " leptoclada.
" " " " plumosa.
" " " " filifera.
" " obtusa.
" " " " lycopodioides.
" " " " pygmæa.
" " " " nana.
" " " " Keteleerii.
" " " " breviramea.
" " " " pendula.
" " " " filicoides.
Juniperus rigida.
* " Nipponica.
* " littoralis.
* " Davurica.
Cephalotaxus drupacea.
Taxus cuspidata.
Sciadopitys verticillata (Umbrella Pine).
Pinus densiflora (often cultivated as P. Massoniana).
* " Thunbergii.

Pinus parviflora.
" Koraiensis.
Tsuga Japonica (Japanese Hemlock).
Gingko biloba (Gingko tree, Salisburia).
Larix læptolepis.

III. Special Regions.

A. Rocky Mountain region of Colorado.

Acer glabrum.
*Robinia Neo-Mexicana.
*Cratægus rivularis.
Betula occidentalis.
*Populus angustifolia (Narrow-leaved Poplar).
Abies concolor (White Fir).
* " subalpina.
Pseudotsuga Douglasii (Douglas Fir).
Picea Engelmannii.
" pungens (Blue Spruce).
Pinus ponderosa, *var.* scopulorum.

B. Siberia.

Caragana arborescens.
Halimodendron argenteum.
Ulmus pumila.
Picea obovata.

C. Toorkistan.

Fraxinus potimophila.

D. Thibet.

*Pinus Gerardiana.

E. Caucasus.

Acer lætum.
Zelkowa crenata.
Pterocarya fraxinifolia.
Carpinus Duanensis.
Picea orientalis.
Abies Nordmanniana.
" Cilicica.

IV. Exceptional Species.

A. Pacific Slope.

Species of the Pacific forest of more or less wide geographical range, which should be tested in New England, from their more northern limits in the Rocky Mountains and Coast Ranges.

Rhamnus Purshiana.
Acer circinnatum.
* " macrophyllum.
*Cratægus Douglasii.
*Pirus rivularis.
Fraxinus Oregana.
*Quercus Garryana.
*Populus tricocarpa.
*Alnus rubra.
* " rhombifolia.
*Salix lasiandra.
*Torreya taxifolia.
*Chamæcyparis Nutkaensis.
*Thuiopsis borealis (of gardens. Hardy in New York).
*Thuja gigantea.
*Abies nobilis.
* " grandis.
* " amabilis.
*Tsuga Mertensiana.
* " Pattoniana.
*Picea Sitchensis.
*Larix Lyallii.
* " occidentalis.
*Pinus albicaulis.
* " contorta, *var.* Murrayana (Twisted Pine).
" flexilis.
* " Lambertiana.
* " monticola.

B. European.

Æsculus Hippocastanum (Horse Chestnut).
Acer campestre.
" platanoides (near the ocean).

Tilia argentea (Silver-leaved Linden).
" dasystylis.
Fraxinus ornus.
Ulmus montana.
" campestris.
Quercus cerris (Turkey Oak).
* " Pannonica.
Carpinus Betulus.
Salix alba (White Willow).
" laurifolia.
Populus alba (White Poplar).
*Picea Omorika.
Larix Europæa (European Larch).

Discussion.

Charles M. Hovey, who had been appointed to lead the discussion, expressed regret that the reading of so valuable a paper should have been fixed for this holiday season, when there were comparatively few to listen to it. The subject covers a great deal of ground. Mr. Hovey spoke of the growth of certain trees in certain climates, such as the *Abies Douglasii*, which is found from the Columbia river to the Colorado. Forty years ago, he imported two or three dozen trees from England, but they all perished in a few years. He thought there was something in taking seed from trees growing in northern regions. He had never seen a tree of *Abies Douglasii* ten feet high in this country, except at Mr. Hunnewell's.

Professor Robinson said he knew of trees of the Douglas Fir raised from Colorado seed, twelve feet high, and that this species forms an admirable illustration of the rule that trees raised from seed collected on the Pacific slope, are tender, while those of the same species from Colorado seed are hardy here. All the California trees raised in England forty years ago were from seed collected on the Pacific slope.

Mr. Hovey said that Mr. Hunnewell imported trees of *Cedrus Deodara*, which, though they proved tender, grew large enough to produce seed, and the trees raised from this seed proved hardy. It is not enough that trees should stand our ordinary winters; the true test is a winter of unusual severity, and we have had no

very severe winter here since 1861. From 1846 to 1857 we had moderate winters, and Sequoias and Cedars of Lebanon in the grounds of the speaker, grew up to the height of six feet, but in 1857 they all went down, and many others were injured in 1861. Trees cannot be recommended as hardy from a trial of three or four years under the most favorable circumstances. He knew no living Cedar of Lebanon or Deodar Cedar of any size here. A few years ago he left four camellias out-doors in the winter, with a thick covering of leaves and evergreen boughs among the branches, to test their hardiness. They remained green and healthy with the temperature as low as eight degrees; after that it fell to zero with snow, but when spring came they were all killed down to the ground. The average winter temperature of the shores of Buzzard's Bay is twenty-eight degrees, which is two degrees higher than that of Boston. The *Prinos glabra*, which is there a beautiful evergreen shrub, is here so much injured as to destroy the glossiness of its leaves. The American Holly, which grows around the shores of Buzzard's Bay, finds its northern limit in the vicinity of Bridgewater.

Mr. Hovey said that he admired the English Elm, but objected to it as a street tree. The limbs grow out horizontally, and those on the Beacon street mall stretch almost across the street. He had read of elm trees in England which were dangerous, from this cause. The American Elm, on the contrary, grows more erect, does not give too much shade, and the limbs will not interfere with travel. The English elm holds its leaves longer than the American, which is an advantage. The Sugar Maple is a fine tree, of slow growth; it takes about thirty years to get it thirty feet high, and our people are unwilling to wait for it. The same may be said of the Scarlet Maple. The White, or Silver Maple, is of more rapid growth, and a very fine tree. Its greatest fault is that the branches are liable to be broken by gales, but the broken limbs may be cut off without material injury. The Oriental Spruce and Nordmann's Spruce, are two of the finest. He had raised seedlings of the *Salisburia*, or Gingko tree, which averaged a foot of growth in a year. He thought the Gingko tree on Boston Common was older than stated by Professor Robinson—probably, eighty or ninety years old. The Liquidamber, whose foliage is so beautiful in autumn, is tender here; the speaker has trees fifteen or sixteen feet high, but one half the growth gets killed back every year, and it is very slow work getting them up.

When Mr. Hovey began cultivating trees, American trees were not to be had in the nurseries here or in Europe, and he employed a man to collect young trees of the Canoe Birch, Hop Hornbeam, and others, in New Hampshire; there was, however, but little demand for them, and some of them are now standing on his ground, fine specimens, forty years old. Nurserymen cannot be expected to raise trees for which there is no demand, and the Arnold Arboretum is just what is wanted to make the public acquainted with these as well as the new introductions. He was pleased to hear Professor Robinson's views in regard to introducing trees from corresponding climates. It is useless to attempt acclimating trees. This is shown by the rhododendron. Three years ago, he visited Kew Gardens, after a hard winter, when nearly all the rhododendrons were perfectly brown, but noticed among a large plantation one which was green and uninjured. He gathered seeds from it and brought them home and planted them, and the seedlings looked promising until the severe frosts, early last October, when the whole of the last season's growth, which was not quite completed, was killed. Seedlings from *Rhododendron Catawbiense*, were uninjured. We may succeed, by hybridizing with the perfectly hardy species, in raising improved hardy varieties; but the process must be very slow. It is, however, the only way to secure the finer colors; but, in getting these we are liable to lose their perfect hardiness.

Mr. Hovey said that in 1844, he received the plates of a folio work by Mr. Loudon, on laying out arboretums, and when he went to England he visited the Derby Arboretum which was laid out by Mr. Loudon; but he was rather disappointed in it. An arboretum should be a collection of all hardy trees, planted in groups according to the natural system. The Arnold Arboretum is yet in its infancy. We should be highly pleased to see the new trees from Toorkistan, and other newly explored regions, but we must not be too sanguine of their adaptation for general planting here, or too quick in deciding on it. By visiting the arboretum, we shall learn what trees are most desirable.

William C. Strong, said that he felt greatly indebted to Professor Robinson for the valuable suggestions in his paper. He asked, in reference to the greater hardiness of trees of *Picea pungens*, and other species when grown from Colorado seed, as compared with those raised from seed from the Pacific slope, whether it was not

the process of acclimation continued over a long period which made the difference. He agreed with Mr. Hovey, that nurserymen could not be expected to raise trees for which there is no demand, but they can do a great deal to educate the public taste. He had had a large quantity of the *Sophora Japonica*, which he endeavored in vain to induce the public to purchase, and they finally went on the brush heap; but, if there were fine specimens of this tree (both the upright and weeping forms) at the Arnold Arboretum, and of other beautiful but little known trees, a better day would come.

Hon. Marshall P. Wilder felt obliged to Professor Robinson for his interesting and appropriate paper, which would tend to bring up the public taste at the right time, just as we have organized a system of public parks, taking in the Arnold Arboretum. The City of Boston stands higher today in education for its action in regard to the Arnold Arboretum. There we shall get the knowledge of trees which former ages could not get. The speaker thought Messrs. Hovey and Strong's apologies for the nurserymen, were quite sufficient. He was pleased with Professor Robinson's distinction between healthy and diseased leaved trees. Though there may be exceptions, the taste for such trees is unnatural, and the speaker did not believe it would continue long. He could not agree with Mr. Strong in regard to acclimation, but thought it in a general sense, a fallacy. Soil and situation have a great deal to do with hardiness. He has a Cedar of Lebanon on a ledge where there is but six inches of soil, and neither too much nor too little water, which has survived when every other one in New England (so far as he knew) has been destroyed. He wished to give all honor to such men as Messrs. Hunnewell, Hayes, and Sargent, who are bringing all the new trees and shrubs from Japan and elsewhere, and testing them.

Professor Robinson said that we must draw the line between what can be accomplished by man in a single generation, and what can be done by nature in the course of ages. The changes effected by nature are gradual and imperceptible. The introduction of hardy and tender forms of the same tree from Colorado and California, is very different from acclimation. Both forms were probably disseminated from one stock at the close of the last geological epoch, when they were forced north, some to Colorado and some to California, — perhaps a million of years ago, — and during that time,

which cannot be computed, have gradually acquired the differences which now mark them.

Mr. Hovey referred to a list published in the "Gardener's Monthly," for 1876 (page 194), of one hundred and seventy-five varieties of deciduous ornamental trees, growing in his grounds at Cambridge, including ten varieties of Magnolias, seven Limes, sixteen Maples, eleven Horse Chestnuts, eleven Hawthorns, sixteen Elms, fourteen Oaks, three Larches, *Koelreuteria paniculata*, *Cladrastis tinctoria* (Yellow-wood), *Caragana arborescens*, *Nyssa biflora*, *Taxodium distichum*, *Gymnocladus Canadensis*, etc.

It was voted that the discussion be continued on the next Saturday.

BUSINESS MEETING.

SATURDAY, December 31, 1881.

An adjourned meeting of the Society was holden at 11 o'clock, the President, Hon. Francis B. Hayes, in the chair.

No business being brought before the meeting it was dissolved.

MEETING FOR DISCUSSION.

The subject was a continuation of that of last week, viz.:

ORNAMENTAL ARBORICULTURE.

J. W. Manning was first called on, and said that our native trees have been greatly overlooked in planting for ornament. The White Pine is one of the best evergreens; it is easily transplanted, and makes a good wind-break, and is valuable both for timber and fuel. The Hemlock is in increasing demand; it makes a good hedge or a fine specimen on the lawn. Though it sometimes suffers from severely cold winds it is found growing naturally in very exposed places. The Tupelo is inclined to root deeply, and is difficult to transplant except when it has been frequently transplanted in the nursery, but a fully developed specimen is very beautiful. The autumn foliage is very richly colored. In swampy land it sometimes grows to two or three feet in diameter. There is a very fine specimen, with an umbrella-shaped head, in Everett, near Bell Rock Station, on the Saugus Branch Railroad.

President Hayes mentioned two very fine specimens, a hundred feet high, in the grounds of Robert B. Parsons, at Flushing, N. Y.

Mr. Manning said there is a very fine one, about eighty feet high, on the farm of Langdon Ordway, in Bow, N. H. Concord, N. H., is distinguished for beautiful elm trees. He thonght the American Elm the handsomest of all the large shade trees.

President Hayes mentioned a remarkably beautiful elm near the old North Church in Concord, N. H. When his namesake, the President of the United States, was at Concord, he visited this tree, and took off his hat to it. He was so impressed with its beauty that he asked to revisit it, which he did, and suggested that the land on which it stands should be purchased and a fence placed around it, and presented to the city, to insure its preservation.

Mr. Manning said there are several fine elms at Newburyport. One near Byfield Station measures, at two feet from the ground and following the ridges of the trunk, forty-two feet in circumference, and at five or six feet from the ground eighteen feet in circumference.

John B. Moore wished to speak in favor of the elm, as the finest street tree in New England. It has been said that it will not grow except in moist soils, but this is not so. Its withy limbs withstand gales better than those of any other tree. It is a rapid grower; one which he helped to plant about fifty years ago, now measures, at eighteen inches from the ground, eleven feet in circumference. There are many trees in Concord which he planted, now from three to eight feet round. Mr. Moore spoke of a Three-thorned Acacia, six feet in circumference; this tree is valuable for its timber, and is not troubled by the borer, like the common locust. There have frequently been great mistakes made when planting elm trees by roadsides, in placing them too close. One handsome, fully developed tree is worth many small ones. There are many varieties of the American elm; one has the limbs feathered with small branches nearly to the ground, and it is one of the most beautiful, if you can keep the ignorant persons employed to prune street trees from cutting them off.

Hon. Marshall P. Wilder asked Mr. Moore if the elm will grow in a soil of all sand.

Mr. Moore replied that it has a faculty of going through three or four rods of gravel to get at a good soil. This was done by two which he set out twenty-five or thirty years ago, and the suc-

cess of which, though he gave each a cartload of soil, seemed for a time rather doubtful.

President Hayes related an anecdote of Judge Chadbourne in his native town in the State of Maine, on the border of the State of New Hampshire, who, soon after potatoes were introduced, raised a barrel of them, which gave him such celebrity that he was made a judge. The judge planted several fine elm trees near his residence, which were much admired, and Governor Hancock, of Massachusetts, hearing them praised, asked the judge to supply him with some like them to plant in Boston. Judge Chadbourne sent his negro man, Pompey, to select the trees, which were forwarded to Boston and planted there. Soon afterwards the judge missed some trees on his own grounds, which he had carefully reserved to adorn his mansion, and, on inquiry, it proved that Pompey, to make sure of giving the governor the best trees, had sent those which the judge had kept for himself.

Rev. A. B. Muzzey said he felt a special interest in one branch of the subject under discussion. He thought the Horse Chestnut tree one of the most beautiful, both for its foliage and its flowers, the latter developing rapidly at a time when there are but few flowers. The horse chestnut tree, celebrated by Longfellow, was cut down, in spite of the remonstrances of those living in the neighborhood, because it interfered with the prospect from the west windows, of certain other persons. One tree on the same street was spared only because a remonstrance was made by ladies. Such acts are too common, even in New England. A neighbor of the speaker had a fine elm which was cut down in its prime because he wanted a little more ground on which to plant vegetables. Other instances might be mentioned of fine trees being cut down for a mere whim. These acts seem almost felonious, and the speaker thought it important that an influence should go forth from this Society to prevent such offences against good taste.

Mrs. Mary E. Wellington spoke of a very fine English Elm at her home in Reading, one hundred and seventy-five years old, which branches low and spreads so wide, and casts so deep a shade, that the family spend much of their time in summer under it.

William C. Strong referred to the subject of acclimation, and said that, though no one thinks tropical trees can be made hardy in New England, there might be a question as to half-hardy trees. Professor Robinson's explanation of the hardiness of *Picea pun-*

gens, from California seed, did not strike him as plausible. Trees raised from California seed are almost hardy here, and quite hardy in France and England; and it is reasonable to suppose that seeds may have been conveyed from California into greater altitudes and colder regions. Corn taken from here to Canada will ripen earlier, and when brought back becomes a six weeks corn. The case is the same with the tomato. Professor Robinson's instance of the *Magnolia glauca*, which, when grown here is perfectly hardy, while plants of the same species brought from Florida would not survive a single winter, is a parallel case. The speaker thought plants from milder climates might be gradually accustomed to that of New England, and he brought up the subject because he deemed it of practical importance. We are introducing many new trees, and shall we cast away all that do not appear to stand our climate? The speaker thought they might be acclimated as men are. The fact that men may become acclimated, encourages us to hope that trees may. In long extended experiments, we may not succeed with a majority, but with others we may be successful. We ought to have institutions like the Arnold Arboretum where such experiments can be carried on.

Hon. Marshall P. Wilder said that Mr. Strong's views were practical, but he would like to have him mention an instance where a tree had been acclimated.

Mr. Strong replied that *Picea Nordmanniana* is of questionable hardiness when young, but afterwards becomes quite hardy. *Cupressus Lawsoniana* is hopeful; it sometimes produces seed here, and the seedlings may be hardy. He had got the type up to eight feet in height. Many Japan plants are hopeful. With many plants there is no prospect of hardiness, but with others there may be.

Thomas Whitaker said that the question of acclimation was an important one, and understanding it will unlock a door which we have thought closed. Professor Robinson said that a certain tree which would flourish in England would not flourish here, and the speaker thought it might be so. More trees are lost here by summer killing than by winter killing. A tree from Siberia will no doubt stand our winters, but will it stand our summers? People talk about the rigors of our winters as compared with those of England, but he could stand a New England winter better than one in old England. He spoke of a trip from Bingley to Bradford, England, with

the mercury at nineteen degrees above zero, and said that when he got six miles the horses and men were all white with hoar frost. After his return he had to take a second trip, and when he got home at night the water was pouring off his clothes. He had ridden ten miles in this country with the thermometer twenty degrees below zero, and suffered less than during his trip to Bradford. He had seen in England, currant and gooseberry bushes putting out leaves in February, but they do not mature their fruit earlier than they do here. They keep their leaves green until November, making a growing season of eight or nine months. In New England the season of growth is but about three months, and in that time the sap must ascend the trees and deposit the matter to form the growth of the year. In England this process goes on slowly, but here at race-horse speed. It is the same with all vegetables. Can we expect to change the habits of trees? A tree from England has not time to mature its wood in one of our short seasons, and consequently is liable to injury in winter. All plants that can mature their wood take a longer time there. It is important in selecting seed to consider where it comes from, and where it is to be sown. He would prefer to get seed from sandy ground to sow on sandy land, rather than from a mucky soil. The question of adaptation comes up in every case. He thought trees might be brought from England and produce seed here, that might be called native. Plants grown under such different circumstances might be botanically alike, but physiologically there must be a difference, and in order to raise trees, plants, or vegetables to as great perfection in one country as in another, they must not only be botanically alike, but also physiologically the same, and it is to do away with this physiological difference that acclimation becomes of so much importance. There is no doubt we are losing vast sums of money every year by not paying proper attention to this subject of adaptation. In England, in some winters wheat hardly stops growing; it certainly would commence in February. In September, we should find that New England wheat had been in the barn six weeks, but in old England it would not even be reaped. Under these circumstances who would think of bringing seed from there here.

Mr. Manning thought it was not strange that trees raised from Colorado seed should be hardy, for in 1880 the cold at the signal station at Pike's Peak was 69° below zero. At Denver, the "blizzards" brought a cold of 30° or 40° below zero. He saw trees of

the Douglas Spruce at the foot of Engelmann Canyon, which had made two feet of growth on the 28th of June. The next day, on Pike's Peak, at an elevation of about 12,000 feet, spruce and pine trees were just budding out. At this elevation he saw *Pinus aristata* three feet in diameter, and spruce trees of the Engelmann type from one to two feet thick and from forty to sixty feet high, but this was in a sheltered position. On the 10th of July he walked from Georgetown, the terminus of the railroad, at an elevation of 8,000 feet, up the Argentine Pass, a distance of nine miles, passing near the Twin Lakes, to the summit of the Pass, which is 13,006 feet above the level of the sea. On this route the spruces at the highest limit of trees (more than 12,000 feet,) were a foot and a half thick at the base and only six feet high, and while on the windward side the branches were like stag's horns, on the leeward side they were fifteen or twenty feet long and very luxuriant. The same species (probably Engelmann's) at an elevation of more than 10,000 feet, grew two or three feet in diameter, and from thirty to fifty feet in height. The Douglas Spruce is not found at as great an elevation as Engelmann's. The speaker saw trees of the latter from twenty to one hundred feet high, and of all shades, from light green to misty blue. One tree of *Picea pungens*, near the South Platte River, was of a glaucous color, and measured five feet in diameter, and one hundred and ten feet in height, and spread forty-five feet, with vigorous branches to the ground.

The Red Oak transplants easily, and makes a good street tree. The American Basswood or Linden tree makes a good shade. It is adapted to a great variety of soils, from light and dry to moist, and succeeds well down to the verge of tide-water.

President Hayes spoke of a remarkably fine elm opposite his summer residence in Lexington, planted soon after the settlement of the country, on the place where John Hancock, the grandfather of the governor, lived.

Leander Wetherell alluded to the remark which he made last season that the elm is not adapted to sandy, gravelly soils. He had seen it growing indigenously between Rochester and Buffalo, in clayey soils, and the same in Canada. His opinion still is that it is not adapted to gravelly soils. He agreed with Professor Robinson that the Sugar Maple is one of the best shade trees, but it is not adapted to gravelly soils. It is a clean tree. A native of Hardwick, in this State, who had made a fortune in California,

when on a visit to his old home, gave a sum of money for planting sugar maples along the streets of the town. The speaker agreed with Mr. Moore that the American elm is superior to the English; he takes great pleasure in looking at the length and beauty of the limbs, which are peculiarly graceful. It is true that the English elm holds its foliage later than the American, but it does not put out so early. The planting of trees has engaged attention from the earliest ages, for we find in the Old Testament the record of care to preserve trees. We must allow for diversity of tastes in regard to trees, and with the great variety all can be pleased. Mr. Hadwen planted his trees himself, because he could get no one to do it as well. The first thing to be considered is the selection of trees, and the second is care in planting. The speaker had noticed in Somerset street, horse chestnut trees defoliated by caterpillars four or five years in succession, with the effect of changing their time of flowering from spring to August. This may be an advantage, as flowers are scarcer at that time than in spring, — as canker worms have changed the bearing year of Baldwin apple trees from the even to the odd year, to the great advantage of the owner.

Mr. Wilder desired to say to Mr. Strong — go on with your attempts at acclimation — "nothing venture nothing have." But he had tried the *Cedrus Deodara*, the *Cryptomeria Japonica*, the *Cupressus Lawsoniana*, and the *Sequoia gigantea*, and, like Mr. Strong, had succeeded in getting them up to some height, but afterwards they failed. Ellwanger & Barry, of Rochester, New York, procured a large quantity of Sequoia seed soon after the tree was discovered, part of which they sent to Europe, and part of which they planted, and raised fine trees from it, but they have gradually diminished in number, until only a very few are left. We cannot adapt a tree to a climate different from its own by any process of cultivation, but when it is raised from seed another element is introduced.

Notice was given that the discussion of the subject would be continued after the business meeting on the next Saturday.

REPORT

OF THE

COMMITTEE ON PLANTS AND FLOWERS,

FOR THE YEAR 1881.

By WILLIAM H. SPOONER, Chairman.

As we endeavor to fulfil the requirements of our official year in a brief retrospect of the work of the Society in this department, our special duty is to transcribe the successful achievements of the various cultivators who make the exhibitions valuable by their contributions.

NEW AND RARE PLANTS AND FLOWERS.

The past season has been unusually prolific in the appearance of new, rare, and valuable plants and flowers, and we have noticed various seedlings of native and foreign origin which deserve attention.

Roses.—Hon. Francis B. Hayes, President of the Society, exhibited, February 5th, Hon. George Bancroft, one of the Bennett Seedling Pedigree Roses,—so called. Color, bright rosy crimson, shaded purple, with Bourbon foliage.

March 28, John B. Moore presented the following new roses:

Gloire de Bourg-la-Reine.—Scarlet red.

William Warden.—Light pink, of good form.

Ferdinand Chaffolte.—Brilliant red, shaded violet.

Mme. Oswald de Kerchove.—Of medium size; white shaded pink, centre tinted coppery; a desirable color.

Catherine Soupert.—White shaded rose, a new color.

In Mr. Moore's collection on the 5th of March, we noticed the variety Charles Darwin, of rich brownish crimson color.

Ellwanger & Barry, of Rochester, N. Y., presented at the Annual Rose Show a seedling from Gen. Jacqueminot, very much in the

way of François Michelon, but the flower was not in the best condition to judge of its true merits.

New Deutzia. — The Pride of Rochester, a seedling from *D. crenata flore pleno*, similar to its parent, but lighter in color, came from Ellwanger & Barry, Rochester, N. Y.

Clematis.—February 12th, we had, from President Hayes, six clematis in pots, in the varieties

Edith Jackman,	Prince of Wales,
Lady Londesborough,	Sir Garnet Wolseley,
Mrs. S. C. Baker,	Stella.

New Hardy Shrubs and Plants.—August 13, Jackson Dawson, of the Arnold Arboretum, exhibited foliage and flowers of hardy shrubs and plants, as follows:

Cephalanthus occidentalis.
Menziesia polifolia versicolor.
" " var. *alba.*
Erica vagans.
" " var. *capitata.*
" " " *alba.*
" *tetralix.*
Calluna vulgaris.
Oxydendrum arboreum.
Clethra alnifolia.
" *acuminata.*
Hypericum Kalmianum.
" *aureum.*
" *patulum.*
Hypericum prolificum.
Spiræa salicifolia, var. *Billardieri.*
" " " *Lenneana.*
" " " *rosea.*
" *eximia.*
Clematis Davidiana.
" *coccinea.*
" *flammula.*
" *tubulosa.*
Sambucus Ebulus.
Robinia hispida.
Hydrangea radiata.
" *arborescens.*

Hardy Perennials.—June 4th, Messrs. Woolson & Co., of Passaic, N. J., exhibited one of the best collections of Hardy Perennials ever shown in our Hall, under the following names:

Achillea tomentosa,
Æthionema cordifolia,
Allium serratum,
" *cæruleum,*
Amsonia angustifolia,
" " var. *Texana,*
" *Tabernæmontana,*
Anchusa Italica,
Anemone Pennsylvanica,
Anthericum Liliastrum,
Aquilegia cærulea,
Arenaria graminifolia,
Arethusa bulbosa,
Armeria plantaginea,

Brevoortia coccinea,
Calochortus flexuosus,
" *Gunnisonii*,
Ceanothus ovatus,
Clematis angustifolia,
Corydalis pallida,
Deutzia parviflora,
Dianthus Caryophyllus,
Dicentra eximia,
Gillenia trifoliata,
Hemerocallis Thunbergii,
Iris Sibirica, var. *sanguinea*,
Jamesia Americana,
Lathyrus palustris,
Lilium callosum,
" *Davuricum*,
" *pulchellum*,
" *Szovitzianum*,
" *tenuifolium*,
Pentstemon confertum, var. *cæruleom purpureum*,
Pentstemon ovatum,
Pentstemons — hybrids of *P. grandiflorum* and *P. Murrayanum*,
Phlox pilosa,
Polygonatum vulgare,
Psoralea esculenta,
Rhodotypus kerrioides,
Romulea, sp. from Asia Minor,
Rosa alba,
" *polyantha*,
" *rugosa*,
Silene maritima,
Spiraea Filipendula fl. pl.,
Thalictrum, sp. from Japan,
Valeriana officinalis,
Veronica amethystina,
" *prostrata*,
Xerophyllum asphodeloides,
Zygadenus Nuttallii,

and twenty-five varieties of German Iris.

Pansies.— From E. L. Beard came the finest collection we have ever seen of the chaste and delicately marked variety of Pansy Odier.

Delphiniums. — Seedlings exhibited by Dr. H. P. Walcott, were remarkably fine — the best presented for many years, with spikes very large and perfect in form, and the colors clearly defined.

E. Sheppard also exhibited new Delphiniums in improved varieties.

Iris Kæmpferi. — June 28, we had from Messrs. V. H. Hallock, Son, & Thorpe, of Queens, N. Y., a very fine assortment of seedling *Iris Kæmpferi*, and varieties.

July 9, Francis Parkman sent a collection of seedlings, and other varieties, even excelling his own productions of former years in the same class of plants.

Hollyhocks.—From John C. Hovey, July 23d and 30th, we had improved Seedling Japanese Hollyhocks. In two years Mr. Hovey has made a great improvement in his seedlings, and has succeeded in producing some remarkably chaste and pretty single, double,

and semi-double flowers, mostly with fringed or serrated edges; the colors varying from crimson feathered into pure white edges, and bright red feathered into a deep border of white, to pure white and deep purplish black feathered into a fringed edge of white, and other variations of color. The leaf is smoother than that of the ordinary hollyhock, and the flowers are more sparingly produced on the stem. They will prove great acquisitions, being particularly hardy.

We notice a great increase in the cultivation of hollyhocks, and the exhibits of this flower the past season, have been much larger than for many years, and wholly of seedlings; the principal contributors have been John B. Moore & Co., E. Sheppard, James Nugent, Miss E. M. Harris, and John L. Gardner.

New Lily.—President Hayes has exhibited the new *Lilium longiflorum var.*, having a variegated leaf with the old type of flower.

Gladioli.—J. F. C. Hyde has shown his seedling, Hyde's White, in the finest condition, and your Committee had another opportunity of seeing the plant at his grounds. Mr. Hyde has taken great care in the selection of the corms this season, and has fully fixed the flower in its character. The plant proves even more vigorous than last year, throwing up a strong flower stem four feet in height, crowned with a remarkably full spike of very large, well expanded flowers, facing boldly to one side. Many of the terminal flowers are semi-double. The growth is peculiarly vigorous, giving an average of three stems to each bulb; many of them have five, and we noticed one with seven stems, indicating a remarkably prolific character, which will greatly add to its favor with the public. Your Committee are unanimous in the opinion that it is the best white gladiolus yet introduced. A First Class Certificate of Merit was awarded to it three years ago, and we now recommend that the Prospective Prize of $40, for the best Seedling Flowering or Foliage Plant (for which it was entered three years ago), be awarded to James F. C. Hyde, for the Gladiolus Hyde's White.

James Cartwright exhibited on the 30th of July, his seedling, No. 128. Color, rosy white, flaked crimson, edges darkly blotched, a line of white running through the centre of each division; base of the perianth dark purple.

Papaver Umbrosum.—George Craft has several times shown this new annual. It has a single flower; color bright rich crimson

with a deep black spot on each petal; a free bloomer and very showy, and, with the increasing taste for the single varieties of this plant, will prove a popular sort.

Variegated Dianthus. — This was from Henry R. Comley. The leaves are half green and half white, retaining their variegation in the hottest sun. It is perfectly hardy.

Single Dahlias.—From E. Sheppard came new single flowered dahlias; particularly noticeable were Paragon (dark maroon color), Cervantesii, and Lutea.

Samuel Smith, of Newport, R. I., exhibited very choice varieties of the same flower.

Hovey & Co. have also shown flowers of this class.

Chrysanthemums.—The Seedlings from Dr. H. P. Walcott were noticeable as a successful experiment in horticultural science, and perhaps the first attainment in this direction in this country. Undoubtedly another year will produce results worthy of the highest commendation.

Pelargoniums.—May 7th, we had from William A. Bock a large collection of Seedling Pelargoniums, many of them very good flowers. We noticed No. 1, a double, and No. 16, single flowered, as promising.

June 28th, V. H. Hallock, Son, & Thorpe, of Queens, N. Y., exhibited a very choice collection of Double Pelargoniums, the greater part of them seedlings raised by Mr. Thorpe of this firm; the following descriptions are by Messrs. Hallock and Thorpe.

Mrs. E. G. Hill.—Very large trusses; color pale blush, overlaid with a delicate lavender shade.

Peter Henderson.—Color bright orange scarlet, fine shape.

Richard Brett.—Orange color—a new shade of color among double varieties; very double.

The Blonde.—Deeply shaded orange, base of petals white; distinct margin of white around each.

Remarkable.—An improved Ernest Lauth, with better shaped flowers and of a deeper shade.

Hazel Kirke.—With immense trusses of rich crimson flowers; short jointed growth.

Robert George.—Deep crimson scarlet; of great size; a free flowerer.

Messrs. Hallock also exhibited the following varieties:

Apple Blossom,
Cheerfulness,
Effective,
Henry Cannell,
J. H. Klippart,
Mrs. Charles Pease,
William Hamilton.

Gloxinias.—Fine strains of seedlings have been shown by Hon. Francis B. Hayes and E. Sheppard.

Alternantheras.—*A. paronychoides major aurea*, was shown by E. Sheppard, August 9th. Color, rich golden yellow; habit dwarf and compact.

Henry Ross exhibited at the Annual Exhibition, the new *Alternanthera latifolia aurea*, raised by himself. Leaves broad and smooth, of a rich yellow color, terminated with yellow, green, and orange, coloring very early; habit, compact. A distinct and decided acquisition among bedding plants.

Indian Azaleas. — March 5th, we had from Hon. Marshall P. Wilder, a seedling which indicates a new break in the character of this beautiful plant, with a peculiar double flower; in color, light rose pink, and blooming in clusters of from eight to twelve flowers, in a truss similar to that of the rhododendron, with crested petals. As Col. Wilder requested the Committee to affix a name to the plant, they concluded to give it the name of its distinguished originator, Marshall Pinckney Wilder. It was in the fifth year from seed.

October 22, Hon. Francis B. Hayes presented a very attractive variety, producing immense trusses of semi-double flowers; color, dark orange, shaded with bright violet, and blotched with chocolate; plant a very strong grower, and a profuse and very early bloomer. It was raised by Hon. Marshall P. Wilder, and named by him Mrs. Francis B. Hayes.

Camellias. — On Thursday, March 3d, your Committee, by invitation of C. M. Hovey, visited the greenhouses of Hovey & Co. to look at the Camellias, which were in the best possible condition of bloom. The greater portion of their plants are seedlings grown by Mr. Hovey, who has made the cultivation of this beautiful flower almost a life work. As the result of his indefatigable labors, he had elegant plants, ten to fifteen feet high, covered with flowers and in fine condition, to show us. In addition to varieties mentioned in reports of former years, we noticed the following, the descriptions being furnished by Mr. Hovey:

Suzette Hovey.—A very distinct and most beautiful variety, in color quite new, as also in shape, having the cupped form so

well known and exemplified in the old Centfeuille rose, but double to the very centre; of a peculiar bright satiny rose color, more or less veined with carmine, and when about two-thirds open, extremely difficult to distinguish from the most exquisitely formed rose, except by its foliage; petals, round, regular, and finely formed. The plant is also remarkable for its very dense, branching habit, and the profusion of its flowers, which continue to open an unusually long period in succession. Leaves of medium size, ovate, nearly flat, very dark green.

Eva Corinne Hovey.—A very robust and vigorous growing variety, with large, broad, thick, handsome leaves; of regular, branching habit, and remarkably stout annual shoots, terminated with unusually large, globular buds, which do not open like most Camellias, by the gradual unfolding of the outer petals, but open from the centre outward, and while opening have a peculiar and beautiful appearance, each petal being tipped with white, as in some dahlias; as they gradually expand, the flowers are so full as to form almost a perfect ball, but keep their elegant cup shape until they drop. Color, light rose, tipped with white; very large; petals large and broad, incurved at the tip. A most distinct and separate variety, quite dissimilar to any other.

Mrs. J. R. Carter.—A very pretty flower, of a rosy crimson color, with a stripe of white in the centre of each petal. Flowers, medium size, very double, cup-shaped, and full to the centre; petals, large, round. Plant vigorous, of an erect habit; foliage of medium size. A beautiful variety, somewhat in the way of Jeffersonii, but superior to it.

John Cummings.—Another variety of distinct color, being dark ruddy scarlet, an entirely new tint. Size, medium, quite double, but not so high in the centre; petals well shaped. The plant is moderately vigorous, erect, with rather small leaves, but flowers freely and abundantly.

Messrs. Hovey's general collection of plants was looking remarkably well, and Mr. Hovey may well congratulate himself that at the age of three score years and ten, he retains his early enthusiasm for horticulture and a remarkable energy and intelligence, which few can hope to emulate.

March 5th, Hovey & Co. presented an extensive display of seedling camellias in twenty-one varieties.

April 2d, Hon. Marshall P. Wilder placed upon the tables his

new seedling camellias, Mrs. Julia Wilder, Jennie Wilder, and the variety A. J. Downing.

Bouvardias. — Nanz & Neuner, of Louisville, Kentucky, sent flowers of *Bouvardia elegans rosea multiflora* or *Williamsonii*, with a very large truss of flowers, color delicate rose, a lovely shade; also, their bouvardia Alfred Neuner, a new pure white double variety; each pip is doubled, like a tuberose; the plant is of a dwarf, vigorous habit, and, apparently, a profuse bloomer. The flowers were received through the mail, and not in the freshest condition, but by placing them in water, under suitable conditions, we were able to judge of their character. A member of the Society has the Alfred Neuner growing, and speaks very favorably of it as being as free a grower, and as profuse a bloomer as bouvardia Davidson.

New Fern. — At the Annual Exhibition, we had from Miss Mary Pratt the beautiful new crested fern *Lastrea Richardsii multifida*. This fern was sent out by Messrs. Veitch, and is described by them as a plant having fronds three feet high, including the stems, which are a foot long; the pinnæ are upwards of four inches long in the broadest part, and terminate in a densely fringed tuft of about fifty long, narrow, acute divisions. Its color is bright green.

Begonias.—August 13th, A. H. Fewkes showed seedling hybrid tuberous rooted Begonias; these were remarkably good flowers, and in desirable colors.

Eben Bacon has also contributed a very fine collection of these flowers.

The variety Marie Bouchet, with semi-double flowers, exhibited by President Francis B. Hayes, was also noticeable.

Dracænas. — At the Annual Exhibition, F. L. Harris presented another group of his fine seedling Dracænas — Nos. 2, 5, 10, 30, 100, and 125.

Epacris. — January 15, President Francis B. Hayes exhibited a very beautiful collection of new Epacris.

Ericas.—At the same time, and also on the 7th of May, President Hayes exhibited an equally fine collection of Ericas. We are glad to notice an increasing interest in these two classes of plants.

Orchids. — February 5, James Cartwright exhibited a beautiful specimen of *Sophronitis grandiflora* with twenty-one blooms, and

we doubt if it was ever shown in finer condition anywhere. On the 5th of March we had, from the same, a plant of *Dendrobium Wardianum*.

Stenocarpus Cunninghamii has been exhibited by Hon. Francis B. Hayes several times during the season; this is a plant not often found in collections, although not new. Williams describes it as "a slow growing but beautiful plant. The stem is erect, the leaves are from twelve to eighteen inches in length, four or five inches broad in the widest part; dark green on the upper surface. Flowers bright scarlet, and produced from the stem."

Anthurium Andreanum, from New Grenada, was exhibited by F. L. Ames. It is described as having leaves of deep green. The erect flower stalk is longer than the leaf stalk and terminates in a decurved spadix, ivory white at the base and yellow at the tip, about three inches long and as thick as a swan's quill.

Hymenocallis Macrostephana, of recent introduction, with a large cluster of pure white flowers, was also shown by Mr. Ames.

Ipomœa Horsfalliæ is a stove climber, in bloom from November to Christmas; very free growing, from thirty-five to forty feet in length, with an evergreen leaf similar in shape to that of the *Ampelopsis quinquefolia*. Flowers, purple-crimson, in large clusters of a hundred or more in a cluster. This is not a new plant, but desirable in a collection. It was exhibited by Mr. Ames, with the two preceding, at the Chrysanthemum Show, November 9.

AZALEA AND ROSE SHOW.

March 17.

Indian Azaleas were not as largely shown as in some previous years. Francis B. Hayes, Marshall P. Wilder, Hovey & Co., H. H. Hunnewell, and Norton Brothers were the contributors, with about the usual varieties.

Roses were not very numerous. Francis B. Hayes, John B. Moore, Norton Brothers, and W. J. Vass made very good displays.

Greenhouse Plants were contributed by Hovey & Co. and Francis B. Hayes.

The Special Prize of a Silver Cup, value $20, for twenty stove

and greenhouse plants, distinct species, for nurserymen and florists only, was awarded to Hovey & Co. for

Alocasia gigantea,
Begonia rubra,
Chorozema varia,
Chrysanthemum Madam Farfeuillon,
Croton Youngii,
Dieffenbachia Bausei,
Dendrobium nobile,
Dracæna amabilis,
" *Goldieana*,
" *terminalis alba*,
Dracæna Youngii,
Eurya latifolia,
Latania Borbonica,
Martinezia erosa,
Pandanus Javanicus var.
" *utilis*,
" *Veitchii*,
Pelargonium Rollisson's Unique,
Rhododendron multiflorum,
Tropæolum tricolorum.

Orchids were exhibited by F. L. Ames and James Cartwright.

Forced Bulbs were shown only by John L. Gardner, but not of so fine quality as those he presented last season.

The Pelargonium Exhibition, May 7th, was not a success, no efforts being made to compete for any of the prizes for these plants.

RHODODENDRON SHOW.

June 4 and 11.

Owing to the backwardness of the season, the award of prizes for Rhododendrons was postponed for one week, to June 11th, at the recommendation of Mr. Hunnewell and other large contributors.

Mr. Hunnewell presented seventy-two named varieties which were very choice, but agreeably to his customary practice, they were not entered for competition.

Hon. Francis B. Hayes exhibited the finest group he has ever shown, a list of which is appended.

Album elegans,
Alexander Dancer,
Atrosanguineum,
Auguste Van Geert,
Baroness Lionel Rothschild,
Baron Schroder,
Blandyanum,
Brayanum,
Broughtoni,
Bylsianum,
Caractacus,
Charles Dickens,

Concessum,
Correggio,
Countess Cadogan,
Countess of Normanton,
Cynthia,
Decorator,
Delicatissimum,
Duchess of Edinburgh,
Duchess of Sutherland,
Earl of Shannon,
Everestianum,
Fastuosum flore pleno,
Fleur de Marie,
Francis B. Hayes,
Frederick Waterer,
General Canrobert,
George Cunningham,
Giganteum,
H. H. Hunnewell,
Iago,
James Bateman,
James Mason,
Jean Verschaffelt,
John Waterer,
Lady Annette de Trafford,
Lady Armstrong,
Lady Dorothy Nevill or Standard of Flanders,
Lady Eleanor Cathcart,
Lady Grenville,
Lord Selborne,
Madame Marie Van Houtte,
Marginatum purpureum,
Mirandum,
Miss Meta T. Wilson,
Mrs. Francis B. Hayes,
Mrs. John Waterer,
Mrs. Milner,
Mrs. Russell Sturgis,
Mrs. Shuttleworth,
Mrs. Thomas Agnew,
Nero,
Nivaticum,
Onslowianum,
Ornatum,
Papilionaceum,
Paxtoni,
Pelopidas,
President Van den Hecke,
Prince Camille de Rohan,
Princess Mary of Cambridge,
Purity,
Purpureum elegans,
Roseum elegans,
Roseum pictum,
Samuel Morley,
Scipio,
Sherwoodianum,
Sir Robert Peel,
Stella,
The Queen,
Tippoo Sahib,
Vandyke,
Verschaffeltii,
William Austin,

Mr. Hayes was awarded the first prize for thirty-six varieties, for eighteen, and for twelve. He also took both prizes for three trusses of blooms of one variety; the first with Lady Eleanor Cathcart, and the second with Mirandum.

Hardy Azaleas.— The prizes for Hardy Azaleas were awarded

on the 4th of June as scheduled. Hon. Francis B. Hayes took the first prize for eighteen varieties with flowers of

Adelaide,	Joseph Baumann,
Adorèe,	Macrantha eximia,
Arden,	Marie Verschaffelt,
Bessie Holdaway,	Mme. Marie Van Houtte.
Brilliant,	Nancy Waterer,
Calendulacea flammea,	Radiata,
Comte de Flandre,	Reine Louise,
Cuprea,	Unique,
Graf von Meran,	Saphira.

E. Sheppard took the first prize for six varieties with

Calendulacea elegans,	Fama,
Clémence,	Graf von Meran,
Cuprea,	Pallas.

For a cluster of trusses of one variety Benjamin G. Smith presented a beautiful cluster of Graf von Meran pleno.

Francis B. Hayes was the only contributor of *Azalea mollis*.

Early Clematis were not shown in as large quantities as we supposed they would be. Joseph H. Woodford exhibited a good collection on the 4th of June.

ROSE AND STRAWBERRY EXHIBITION.

June 28.

The exhibition this season was by far the largest and finest ever made by the Society, the quality of the flowers being exceptionally good. Owing to the prolonged coldness of the season the date was changed from Thursday, the 23d of June, as fixed in the Schedule, to Tuesday, the 28th.

Special Prizes.

William Gray, Jr., for the third time competed for and was awarded the Challenge Cup, for seventy-two as superb roses as were ever seen in our Hall and which justly deserved the award. His competitors this year were John B. Moore and Francis B. Hayes, who exhibited very fine flowers.

Mr. Gray presented the following varieties, three of each,

Caroline de Sansal,	Marguerite Brassac,
Comtesse d' Oxford,	Marie Finger,
Duchesse d' Aoste,	Marquise de Castellane,
Duchesse de Caylus,	Miss Hassard,
Édonard Morren,	Mlle. Bonnaire,
Étienne Levet,	Mme. Gabriel Luizet,
Exposition de Brie,	Mme. la Baronne de Rothschild,
Félix Généro,	Mme. Prosper Laugier,
François Michelon,	Mme. Victor Verdier,
John Hopper,	Perfection des Blanches,
Mabel Morrison,	Pierre Notting,
Magna Charta,	Richard Wallace.

For the third time the special prizes of silver cups were offered, and the competition for them was unusually brisk. A Silver Cup, value $25, for the best three roses of different varieties was awarded to William H. Spooner, for Duke of Edinburgh, Mme. la Baronne de Rothschild, and Victor Verdier.

A Silver Cup, value $25, for the best six roses of different varieties to J. S. Richards. The list of varieties was not furnished.

A Silver Cup, value $25, for the best twelve roses of different varieties to William Gray, Jr., for

André Dunand,	Magna Charta,
Charles Lefebvre,	Marie Beanman,
Édouard Morren,	Mlle. Eugénie Verdier,
Thomas Mills,	Mrs. Baker,
Jean Soupert,	Thomas Mills,
Mabel Morrison,	W. Wilson Saunders.

A Silver Cup, value $25, for the best three roses of one variety, to John B. Moore & Co., for Duke of Edinburgh.

A Silver Cup, value $25, for the best six roses of one variety, to Norton Brothers, for Mme. la Baronne de Rothschild.

A Silver Cup, value $25, for the best twelve roses of one variety, to John C. Chaffin, for Mme. la Baronne de Rothschild.

Society's Prizes.

Hardy Perpetual Roses. For six new varieties sent out since 1876, the first prize was awarded to John B. Moore & Co., for

Alfred K. Williams,	Doctor Sewell,
Barthélmy Joubert,	Grand Duc Nicolas,
Boïeldieu,	Princesse Blanche d'Orleans.

For the best twenty-four varieties, three of each, to John B. Moore & Co. for

Abbé Bramerel	Marguerite de St. Amand,
Charles Lefebvre,	Marie Beauman,
Duke of Wellington,	Marquise de Castellane,
Dupuy Jamain,	May Turner,
Ferdinand de Lesseps,	Mlle. Bonnaire,
Fisher Holmes,	Mme. Nachury,
General Forey,	Mme. Victor Verdier,
General Jacqueminot,	Paul Neron,
John Hopper,	Peach Blossom,
Jules Margottin,	Richard Wallace,
Kate Hausberg,	Thomas Mills,
Lyonnaise,	Vicomtesse de Vézins.

For twelve varieties, to John L. Gardner, and for the best six varieties, to the same. No list was furnished of either of these two.

For three varieties, to John B. Moore & Co., for Perfection des Blanches, Mrs. Laxton, and Duke of Edinburgh.

Moss Roses. For the best six varieties the first prize went to John B. Moore & Co. for

Comtesse de Murinais,	Prolific or Gracilis,
Lancel or Etna,	Violacée,
Laneï,	Zaïre.

For three varieties, to John B. Moore & Co., for Gloire des Mousseuses, Crested, and Quatre Saisons.

It will be noticed that the two fine old varieties Duke of Edinburgh and Mme. la Baronne de Rothschild still maintain their character as grand exhibition Roses.

Special Prize for Stove and Greenhouse Plants.

The Silver Cup of the value of $20, for the best Group of twenty Stove and Greenhouse Ornamental Foliaged Plants, was awarded to S. R. Payson, for

Adiantum Farleyense,	*Bertolonia Van Houttei*,
" *gracillimum*,	*Caladium Chantinii*,
Alocasia Sedeni,	" *Herold*,
" *Thibautiana*,	" *Souvenir de Mme. André*,
Artocarpus Cannonii,	

Cocos Weddelliana,
Croton Lord Derby,
" *Queen Victoria*,
" *Williamsii*,
Cyanophyllum magnificum,
Dieffenbachia Bausei,
Dracæna Baptistii,
" *Goldieana*,
" *Leopoldii*,
Hydrangea Japonica var.,
Pandanus Veitchii.

ANNUAL EXHIBITION.

SEPTEMBER 13, 14, 15, AND 16.

This presented special attractions from the fact that the American Pomological Society, by invitation, made its exhibition in our Halls, while the display of plants and flowers was held at Music Hall. The latter was somewhat differently arranged from the usual plan, and with excellent effect, having through its centre a platform containing about eight hundred square feet of surface upon which were grouped by H. H. Hunnewell and Samuel R. Payson splendid collections of plants, arranged with artistic skill, and blending their varied hues with perfect success. On each side were two smaller platforms filled with plants from F. L. Ames, Hovey & Co., J. Warren Merrill, Hon. Francis B. Hayes, John L. Gardner, and Miss Pratt; these were choice in quality, though not all as large as those in the central group, which together with them, filled the body of the Hall with a mass of beautiful foliage. Upon the stage in front of the organ, William Gray, Jr., placed some fine tropical plants, and on the front edge were ranged a row of caladiums from Messrs. Hovey & Co., and Edwin Sheppard. At the sides of the Hall were stands filled with cut flowers by Mrs. A. D. Wood, Mrs. E. M. Gill, Messrs. Hovey & Co., C. W. Ross, J. W. Manning, William S. Ewell, James Nugent, and others, reflecting the greatest credit on all concerned in the display, which was the finest we have ever seen.

The seats were removed from the front lower gallery, and two rows of stands for flowers placed there, which were filled with fine collections of gladioli from James Cartwright, Norton Brothers, and A. McLaren; native flowers from Mrs. C. N. S. Horner and Miss M. E. Carter; and foliage and flowers of rare hardy trees and shrubs from the Arnold Arboretum and W. C. Strong & Co. Under the gallery Mr. Manning arranged a large assortment of evergreens, and baskets filled with plants from Mr. Ewell, were suspended

from the front, where there was also a display of orchids from Mr. Ames.

Special Prizes.

Stove and Greenhouse Plants. S. R. Payson was awarded the Silver Cup of the value of $40, for twelve Ornamental Foliaged Stove and Greenhouse Plants. They were

Alocasia gigantea,
Anthurium crystallinum,
Cocos Weddelliana,
Croton fasciatus,
" *Veitchii*,
Dracæna Baptistii,
Dracæna Hendersonii,
Erythrina marmorata,
Maranta Van den Heckei,
Pandanus Veitchii,
Phyllotænium Lindeni,
Sphærogyne latifolia.

The second prize for the same, a Silver Cup of the value of $25, was awarded to F. L. Ames, for

Adiantum Farleyense,
Alocasia Sedeni,
" *zebrina*,
Ceroxylon niveum (Wax Palm),
Croton angustifolium,
" *variabilis*,
Curculigo recurvata variegata,
Dracæna Baptistii,
Ficus Parcelli,
Maranta Lindeni,
" *virginalis*,
Nepenthes distillatoria.

F. L. Ames took the Silver Cup of the value of $40, for ten Stove and Greenhouse plants — five foliage, and five in bloom, with the following:

Foliage Plants.

Adiantum amabile,
Areca lutescens,
Croton Queen Victoria,
Cyanophyllum magnificum,
Dracæna Hendersonii,

Flowering Plants.

Allamanda Schottii,
Begonia rubra,
Dipladenia Brearleyana,
Ixora Williamsii,
Odontoglossum grande.

The second prize for the same, a Silver Cup of the value of $20, was awarded to H. H. Hunnewell, for the following:

Foliage Plants.

Areca crinita,
Croton fasciatus,
Dracæna Bella,
Maranta fasciata,
Sphærogyne latifolia,

Flowering Plants.

Anthurium Scherzerianum,
Begonia rubra,
Clerodendrom fallax,
Ixora Amboinensis,
Nerium Oleander album flore pleno.

Dahlias. The Subscription Prize, a Piece of Plate of the value of $10, for the best twenty-four dissimilar blooms, was awarded to E. Sheppard, for

America,
Annie Neville,
Charles Leicester,
Constancy,
Duke of Connaught,
Emily Edwards,
Henry Glascock,
Hercules,
James Cocker,
J. C. Reid,
John Bennett,
John Lamont,
John MacPherson,
John Wyatt,
King of Primroses,
Letty Coles,
Michael Saunders,
Mrs. Hodgson,
Mrs. Swan,
Paul of Paisley,
Picotee,
Prince Bismark,
Stafford Gem,
Vivid.

CHRYSANTHEMUM SHOW.

November 9.

Although very good, this was not as large as in some former years, the frost early in October undoubtedly injuring the plants to a certain extent. The contributors of plants were Dr. H. P. Walcott, H. L. Higginson, and Norton Brothers. Cut blooms were shown by Dr. Walcott, E. W. Wood, B. G. Smith, Mrs. E. M. Gill, and E. Sheppard.

Orchids were shown by F. L. Ames, in his usual choice kinds.

Miss E. H. Craft presented for the third time a design of autumn flowers, excelling her previous efforts. The design was the object of universal admiration for its beauty of form and exquisite combination of colors.

MISCELLANEOUS EXHIBITS.

President Francis B. Hayes has been a constant contributor throughout the season, his exhibits being peculiarly valuable, and in variety of flowers embracing a wide range from week to week,

seldom duplicating his previous shows, and thereby adding greatly to the life and variety of our weekly displays.

Cut Flowers. — The shows during the season have been remarkably good; Mrs. A. D. Wood, Mrs. E. M. Gill, James Nugent, Mrs. L. P. Weston, George Craft, and E. Fewkes, competing for the prizes.

Vases of Flowers. — We notice a great improvement in these.

Annuals. — The prizes for Annuals, such as Petunias, Phlox Drummondii, Sweet Peas, Tropæolums, Double Zinnias, Dianthus, and Marigolds, have found a large competition, and the displays were remarkably good.

Perennial Phloxes from John B. Moore & Co. were noticeably fine.

Gladioli have not been shown in as large quantities as last season, but very good flowers have appeared from time to time. August 20th, J. F. Marble was awarded the first prize for twenty named varieties in excellent flowers; George Craft, the first for ten spikes; R. T. Jackson, for six spikes, and Franklin Batcheller the prize for a single spike, the variety being Baroness Burdett Coutts — a very large and beautiful flower; color, delicate lilac tinged with rose. It is of very vigorous growth.

The exhibitors for the general display were James Cartwright, George Craft, and Herbert Gleason.

Nymphæas. — August 20th, Edward Haskell, of New Bedford, presented a fine assortment of *Nymphæas* in the varieties *rubra*, *rosea*, *alba*, and *cærulea*. Mr. Haskell is a very successful cultivator of this beautiful genus, and his collection is perhaps unequalled in this section of the country.

Native Flowers have not been shown as frequently as in former years, but on the 6th of August, the collections of Mrs. C. N. S. Horner and Mrs. A. J. Dolbear were very large, embracing a great variety, with the names attached.

On the 7th of May, E. H. Hitchings presented several rare varieties, viz.: — *Nardosmia palmata* (never shown here before), *Viola Canadensis*, *V. rostrata*, *Asarum Canadense*, and *Gaultheria procumbens var.*

June 28th, the following Alpine Plants, collected on the Crawford bridle path, Mount Washington, N. H., by Edwin Faxon, were shown:

Arctostaphylos alpina,
Azalea procumbens,
Diapensia Lapponica,
Empetrum nigrum,
Potentilla frigida,
Rhododendron Lapponicum,
Rubus Chamæmorus.

August 27th, Charles E. Marsh and Charles E. Pecker presented a new variety of *Nymphæa* (Pond lily), three weeks earlier than the common white. It was found two miles from the Kennebec river.

September 3, O. M. Holmes exhibited *Nelumbium luteum*, a very rare native species.

At the Annual Exhibition we had from Mrs. Catherine Starbuck, of Nantucket, a collection of plants; among them the following, which have never been shown here before:—*Hypericum adpressum*, *Sabbatia gracilis*, *Spiranthes simplex*, and *Erythræa spicata*.

The amount of money prizes and gratuities awarded, is $1,494, out of the appropriation of $1,500.

Prizes have been awarded from the Hunnewell fund to the amount of $64.

All which is respectfully submitted.

Wm. H. Spooner,
E. H. Hitchings,
J. H. Woodford,
F. L. Harris,
James Cartwright,
Patrick Norton,
Charles W. Ross,
} *Committee on Plants and Flowers.*

PRIZES AND GRATUITIES AWARDED FOR PLANTS AND FLOWERS.

JANUARY 1.

Gratuity :—

Francis B. Hayes, Display of Flowers, ... $1 00

JANUARY 8.

Gratuities :—

Francis B. Hayes, Display of Flowers, ... 1 00
Mrs. E. M. Gill, " " " 1 00
John L. Gardner, *Erica Willmorei*, ... 2 00

JANUARY 15.

Gratuities :—

Mrs. E. M. Gill, Display of Flowers, ... 1 00
W. C. Strong, Moss Rose in pot, ... 1 00

JANUARY 22.

Gratuity :—

Mrs. E. M. Gill, Display of Flowers, ... 1 00

JANUARY 29.

Gratuities :—

Francis B. Hayes, Display of Flowers, ... 2 00
James O'Brien, *Dendrobium nobile* and Lilacs, ... 1 00
Henry L. Higginson, Bougainvillea and Bignonia, ... 1 00

FEBRUARY 5.

Gratuities :—

Francis B. Hayes, Display of Flowers, ... 2 00
W. C. Strong & Co., Cut Roses, ... 3 00
" " " " Rose in pot, ... 2 00
Hovey & Co., Camellias, ... 1 00

FEBRUARY 12.

Gratuities :—

John E. Peabody, Collection of Plants, ... 5 00
Francis B. Hayes, Display of Flowers, ... 2 00
Mrs. E. M. Gill, " " " 1 00
W. C. Strong & Co., Hybrid Perpetual Roses, ... 2 00

David Allan, *Clianthus Dampieri*, ... $1 00
John L. Gardner, Violets, ... 2 00
Hovey & Co., Large Display of Camellias, ... 5 00

FEBRUARY 19.

Gratuity:

Hovey & Co., Camellias, ... 2 00

FEBRUARY 26.

Gratuities:—

Francis B. Hayes, Display of Flowers, ... 2 00
Benjamin G. Smith, Carnations, ... 1 00
Hovey & Co., Camellias, ... 2 00
Joseph H. Woodford, Hyacinths, ... 1 00
C. B. Gardiner, Cyclamen, ... 1 00

MARCH 5.

Gratuities:—

John B. Moore, Hybrid Perpetual Roses, ... 3 00
Hovey & Co., Camellias, ... 2 00
Henderson Inches, Hyacinths, ... 1 00
Francis B. Hayes, Display of Flowers, ... 2 00
Mrs. E. M. Gill, " " " 1 00

MARCH 12.

Gratuities:—

Francis B. Hayes, Display of Flowers, ... 2 00
Hovey & Co., Camellias, ... 1 00

AZALEA AND ROSE SHOW.

MARCH 17.

Special Prize.

OFFERED BY A MEMBER OF THE SOCIETY.

For Nurserymen and Florists only.

Group of twenty Stove and Greenhouse Plants, distinct species, grown in pots not over eight inches in diameter, six to be in bloom, Hovey & Co., Silver Cup, value, ... $20 00

Society's Prizes.

INDIAN AZALEAS, Six named varieties, in pots, Francis B. Hayes, . $12 00
Two named varieties, H. H. Hunnewell, ... 8 00
Specimen Plant, Norton Brothers, ... 5 00

Four named varieties, in not exceeding ten-inch pots, Marshall P. Wilder, ... $8 00
Single plant, in not exceeding a six-inch pot, Hovey & Co., . . 4 00
HYBRID PERPETUAL ROSES.—Single plant. Francis B. Hayes, . . 5 00
Twelve cut blooms, of six named varieties, John B. Moore, . . 6 00
Six cut blooms, of four named varieties, John B. Moore, . . 3 00
Second, John B. Moore, ... 2 00
Single bloom, John B. Moore, ... 2 00
Second, Norton Brothers, ... 1 00
TENDER ROSES.—Display in dish, basket, or vase, William J. Vass, 5 00
Third prize to Norton Brothers, ... 3 00
GREENHOUSE PLANTS.—Specimen, in bloom, other than Azalea or Orchid, Hovey & Co., ... 5 00
Second, Francis B. Hayes, ... 4 00
ORCHIDS.—Three plants, in bloom, F. L. Ames, ... 10 00
Second, James Cartwright, ... 6 00
Single plant in bloom, F. L. Ames, ... 5 00
Second, F. L. Ames, ... 3 00
CYCLAMENS.—Six plants, in not over eight-inch pots, in bloom, C. B. Gardiner, ... 4 00
HEATH.—Single plant, in bloom, John L. Gardner, ... 3 00
Second, Mrs. E. M. Gill, ... 2 00
PRIMULAS.—Three plants, single flowered, in bloom, John L. Gardner, ... 2 00
Three plants, double flowered, in bloom, Hovey & Co., . . . 2 00
VIOLETS.—Six pots, in bloom, John L. Gardner, ... 3 00
HYACINTHS.—Twelve bulbs, in pots, John L. Gardner, . . . 5 00
Six bulbs, in pots, John L. Gardner, ... 4 00
Single bulb, in pot, John L. Gardner, ... 2 00
TULIPS.—Six, in pots, John L. Gardner, ... 3 00
NARCISSUS.—Four six-inch pots, John L Gardner, ... 3 00
CAMELLIAS.—Display of named varieties, cut flowers with foliage, not less than twelve blooms, Hovey & Co., ... 4 00
Second, Hovey & Co., ... 3 00
Six cut blooms, Hovey & Co., ... 3 00
Second, John L. Gardner, ... 2 00
CUT FLOWERS.—Display filling 50 bottles, not including Roses, Mrs. E. M. Gill, ... 3 00
Second, Mrs. A. D. Wood, ... 2 00
HAND BOUQUETS.—Pair, James Nugent, ... 3 00
BASKET OF FLOWERS.—Best arranged, the second prize to Mrs. E. M. Gill, ... 2 00

Gratuities:

Marshall P. Wilder, Azaleas in pots, ... 4 00
Francis B. Hayes, " " " 4 00

William J. Vass, Hybrid Perpetual Roses,	$2 00
Norton Brothers, " " "	2 00
W. C. Strong & Co., " " " in pots,	2 00
Mrs. A. D. Wood, Basket of Flowers,	1 00
Hovey & Co., Display of Camellias,	3 00
E. Sheppard, Pansies,	1 00
" " Display of Flowers,	1 00
Mrs. L. P. Weston, " " "	2 00
Francis B. Hayes, " " "	2 00
" " " Rhododendrons and Azaleas,	2 00
" " " Camellias,	1 00
James Cartwright, Orchids,	5 00
Norton Brothers, Plants,	4 00
Hovey & Co., "	3 00

March 28.

Gratuities: —

John B. Moore, Hybrid Perpetual Roses,	1 00
W. C. Strong & Co., Mme. la Baronne de Rothschild Roses,	1 00
Hovey & Co., Camellias,	2 00
Francis B. Hayes, Display of Flowers,	2 00

April 2.

Gratuities: —

Francis B. Hayes, Azalea Charmer,	1 00
Hovey & Co., Camellias,	1 00
Francis B. Hayes, Display of Flowers,	2 00
Mrs. E. M. Gill, " " "	1 00

April 9.

Gratuities: —

Francis B. Hayes, Heaths and Amaryllis,	2 00
John E. Peabody, Plants,	5 00
" " Orchids,	2 00
John L. Gardner, Polyanthus,	2 00
Hovey & Co., Camellias,	1 00
" " Azaleas,	2 00
" " Epidendrums,	1 00
" " Lily of the Valley,	1 00
Francis B. Hayes, Display of Flowers,	2 00

April 16.

Gratuity: —

Francis B. Hayes, Display of Plants and Flowers,	2 00

April 23.

Gratuities: —

John L. Gardner, Plants,	10 00
Francis B. Hayes, Ericas,	2 00

Hovey & Co., Camellias, ... $1 00
Francis B. Hayes, Display of Flowers, ... 1 00
Mrs. E. M. Gill, " " " 1 00

APRIL 30.

Gratuities: —

Francis B. Hayes, Display of Flowers, ... 1 00
Mrs. L. P. Weston, " " " 1 00
Mrs. E. M. Gill, " " " 1 00
Hovey & Co , " " " and Plants, . . . 1 00
Mrs. A. D. Wood, " " " 1 00
" " " " Lilies in pots, ... 1 00
B. G. Smith, Pansies, ... 1 00

PELARGONIUM EXHIBITION.

MAY 7.

CALCEOLARIAS.—Six varieties in pots, John E. Peabody, . . $5 00
Second, John E. Peabody, ... 3 00
Single Plant, John E. Peabody, ... 1 00
TABLE DESIGN, other than a Basket of Flowers.—Mrs. A. D. Wood, 3 00
Second, Mrs. E. M. Gill, ... 2 00

Gratuities: —

Hovey & Co., Pelargoniums in pots, ... 3 00
William A. Bock, Seedling Pelargoniums, ... 3 00
John Parker, Pelargonium Peter Grieve, ... 1 00
B. G. Smith, Pansies and Andromedas, ... 1 00
Mrs. E. M. Gill, Plants and Flowers, ... 2 00
Mrs. A. D. Wood, " " " 2 00
Francis B. Hayes, Display of Flowers, ... 2 00
Hovey & Co., " " " 2 00
Mrs. L. P. Weston, " " " 1 00
E. H. Hitchings, Native Plants, ... 1 00

MAY 14.

Gratuities: —

E. Sheppard, *Cattleya Mossiæ*, ... 2 00
" *Hydrangea Otaksa*, ... 1 00
" Pelargoniums, ... 1 00

MAY 21.

Gratuities: —

Francis B. Hayes, *Erythrina Crista-galli*, ... 1 00
Mrs. A. D. Wood, Display of Flowers, ... 2 00
Mrs. E. M. Gill, " " " 2 00
E. H. Hitchings, Native Flowers, ... 2 00
George E. Davenport, Native Flowers, ... 1 00

RHODODENDRON SHOW.

June 4.

Hunnewell Premiums.

Hardy Azaleas.—Eighteen named varieties, Francis B. Hayes,	$12 00
Six named varieties, E. Sheppard,	4 00
Second, B. G. Smith,	3 00
Cluster of trusses, of one variety, B. G. Smith,	2 00
Azalea Mollis.—Six trusses, of different varieties, Francis B. Hayes,	2 00

Society's Premiums.

Tree Pæonies.—Six named varieties, Marshall P. Wilder,	3 00
Second, Marshall P. Wilder,	2 00
Cut Flowers.—Display, filling 100 bottles, W. K. Wood,	4 00
Second, Mrs. E. M. Gill,	3 00
Hardy Flowering Shrubs.—Twelve named varieties, B. G. Smith,	3 00
Native Plants.—Display of named species and varieties, Mrs. C. N. S. Horner,	4 00
Clematis.—Early named varieties, display of cut blooms, Joseph H. Woodford,	3 00
Table Design, other than a Basket of Flowers, Mrs. A. D. Wood,	4 00

Gratuities:—

Francis B. Hayes, Ericas,	3 00
John B. Moore, Clematis, Iris, etc.,	2 00
Joseph Tailby, Carnations,	1 00
B. G. Smith, Pansies,	1 00
H. H. Hunnewell, Display,	5 00
Francis B. Hayes, "	5 00
John L. Gardner, "	2 00
E. Sheppard, "	2 00
Mrs. L. P. Weston, "	2 00
James Nugent, "	2 00
Hovey & Co., "	2 00
B. G. Smith, "	1 00

June 11.

Hunnewell Premiums.

Hardy Rhododendrons.—Thirty-six named varieties, one truss each, Francis B. Hayes,	15 00
Eighteen named varieties, Francis B. Hayes,	8 00
Second, John L. Gardner,	6 00
Twelve named varieties, Francis B. Hayes,	6 00
Three trusses of blooms, of one variety, Francis B. Hayes,	4 00
Second, Francis B. Hayes,	2 00

Gratuities:—

H. H. Hunnewell, Rhododendrons,	$6 00
Hovey & Co., Rhododendrons, Azaleas, and Clematis,	3 00
Mrs. L. P. Weston, Display of Flowers,	1 00
Edwin Faxon, Native Flowers from the White Mountains,	2 00
Francis B. Hayes, Display of Flowers,	3 00
E. Sheppard, " " "	2 00
Mrs. E. M. Gill, " " "	1 00
W. K. Wood, " " "	1 00

ROSE SHOW.

JUNE 28.

Special Prizes.

HYBRID PERPETUAL ROSES.—Twenty-four varieties, three specimens of each, William Gray, Jr., a Challenge Cup, value,	$150 00
Three roses, of different varieties, William H. Spooner, Silver Cup, value,	25 00
Six Roses, of different varieties, J. S. Richards, Silver Cup, value,	25 00
Twelve Roses, of different varieties, William Gray, Jr., Silver Cup, value,	25 00
Three Roses, of one variety, John B. Moore & Co., Silver Cup, value,	25 00
Six Roses, of one variety, Norton Brothers, Silver Cup, value,	25 00
Twelve Roses, of one variety, John C. Chaffin, Silver Cup, value,	25 00

Society's Prizes.

HARDY PERPETUAL ROSES.—Six new varieties, sent out since 1876, John B. Moore & Co.,	6 00
Twenty-four distinct named varieties, John B. Moore & Co.,	20 00
Second, Warren Heustis,	15 00
Twelve distinct named varieties, John L. Gardner,	10 00
Second, Francis B. Hayes,	8 00
Third, John B. Moore & Co.,	6 00
Six distinct named varieties, John L. Gardner,	6 00
Second, John B. Moore & Co.,	5 00
Third, J. S. Richards,	4 00
Three distinct named varieties, John B. Moore & Co.,	4 00
Second, Francis B. Hayes,	3 00
Third, Ellwanger & Barry, Rochester, N. Y.,	2 00
MOSS ROSES.—Six named varieties, three clusters of each, John B. Moore & Co.,	5 00
Second, John B. Moore & Co.,	3 00

Three named varieties, three clusters of each, John B. Moore & Co.,	$3 00
Second, William H. Spooner,	2 00
Tea and Bourbon Roses.—Twelve cut blooms, Norton Brothers,	3 00
General Display, of all classes, Norton Brothers,	10 00
Second, W. C. Strong & Co.,	8 00
Third, J. S. Richards,	5 00

Special Prize.

OFFERED BY A MEMBER OF THE SOCIETY.

Group of twenty Stove and Greenhouse Ornamental Foliaged Plants, S. R. Payson, Silver Cup, value,	20 00

Society's Prizes.

Stove and Greenhouse Flowering Plants.—Six distinct varieties in bloom, F. L. Ames,	10 00
Second, John L. Gardner,	8 00
Specimen Plant.—Regard being had to new and rare varieties, F. L. Ames,	6 00
Second, John L. Gardner,	4 00
Herbaceous Peonies.—Ten named varieties, Hovey & Co.,	3 00
Sweet Williams.—Thirty trusses, of not less than six distinct varieties, E. Sheppard,	3 00
Second, A. McLaren,	2 00
Third, Mrs. E. M. Gill,	1 00
Summer Herbaceous Plants.—Display of named species and varieties, filling twenty-five bottles, Hovey & Co.,	4 00
Second, James Nugent,	3 00
Vase of Flowers.—Best arranged, in one of the Society's glass vases, James O'Brien,	5 00
Second, Mrs. A. D. Wood,	4 00
Third, Francis B. Hayes,	3 00

Gratuities:—

Ellwanger & Barry, Rochester, N. Y., Display of Roses,	10 00
William H. Spooner, " " "	3 00
O. B. Hadwen, " " "	1 00
Norton Brothers, Basket of Roses,	1 00
Patten & Co., Tender Roses,	2 00
E. Sheppard, Tuberous Begonias, and other plants,	10 00
Ellwanger & Barry, Trees and Shrubs,	3 00
James Cartwright, Orchids,	2 00
John C. Hovey, Pæonies and Pyrethrums,	1 00
Miss E. M. Harris, Pæonies,	1 00
William S. Ewell, Display,	2 00
Mrs. A. D. Wood, "	2 00

Mrs. L. P. Weston, Display, ... $2 00
Francis B. Hayes, " 2 00
E. Sheppard, " 1 00
Hovey & Co., " 1 00
Miss A. C. Kenrick, " 1 00

JULY 2.

HYBRID PERPETUAL ROSES.—Twenty-five blooms, John B. Moore & Co., ... 5 00
Second, John B. Moore & Co., ... 4 00
CUT FLOWERS.—Display, filling 100 bottles, W. K. Wood, . . 4 00
Second, Mrs. E. M. Gill, ... 3 00
Third, James Nugent, ... 2 00
TABLE DESIGN.—Best arranged, James O'Brien, ... 3 00

Gratuities:—

Francis B. Hayes, Display of Roses, ... 3 00
" " " " of Clematis, ... 1 00
B. G. Smith, Roses and Pæonies, ... 1 00
Mrs. E. S. Joyce, Display of Flowers, ... 1 00

JULY 9.

LILIUM CANDIDUM.—Twelve spikes, Herbert Gleason, . . . 3 00
Second, B. G. Smith, ... 2 00
VASE OF FLOWERS.—Best arranged, in one of the Society's Glass Vases, James O'Brien, ... 5 00
Second, Mrs. A. D. Wood, ... 3 00

Gratuities:—

Jacob W. Manning, *Iris Kæmpferi*, ... 1 00
" " " Display of Flowers, ... 1 00
Francis B. Hayes, " " " 2 00
W. K. Wood, " " " 1 00
Miss E. M. Harris, " " " 1 00
Mrs. E. S. Joyce, " " " 1 00
Mrs. E. M. Gill, " " " 1 00

JULY 16.

HOLLYHOCKS.—Twelve blooms, of twelve distinct colors, John L. Gardner, ... 4 00
Six blooms, of six distinct colors, John B. Moore & Co., . . 2 00
Second, Hovey & Co., ... 1 00
Three blooms, of three distinct colors, E. Sheppard, . . . 1 00
Single spike, John B. Moore & Co., ... 2 00
Second, John B. Moore & Co., ... 1 00
CUT FLOWERS.—Display, filling 100 bottles, W. K. Wood, . . 4 00
Second, Mrs. E. M. Gill, ... 3 00
Third, Mrs. L. P. Weston, ... 2 00

Gratuities:—

Herbert Gleason, *Lilium candidum*,	$2 00
E. Sheppard, Hollyhocks,	1 00
" " Pelargoniums,	1 00
Hovey & Co., Display of Flowers and Foliage,	2 00
George Craft, " " "	2 00
J. W. Manning, " " "	1 00
Mrs. E. S. Joyce, " " "	1 00

JULY 23.

PERENNIAL PHLOXES.—Six distinct named varieties, one spike of each, the second prize to E. Sheppard,	2 00
PELARGONIUMS.—Twelve double and single varieties, E. Sheppard,	2 00
Second, Mrs. E. M. Gill,	1 00

Gratuities:—

John B. Moore & Co., Hollyhocks,	1 00
Miss E. M. Harris, "	1 00
James Nugent, "	1 00
E. Sheppard, "	1 00
John L. Gardner, *Erica Parmentieriana rosea*,	1 00
Edwin Fewkes, Petunias,	1 00
George Craft, Sweet Peas and Nasturtiums,	1 00
" " Display of Flowers,	2 00
Francis B. Hayes, " " "	2 00
W. K. Wood, " " "	2 00
J. W. Manning, " " "	1 00
Mrs. E. S. Joyce, " " "	1 00
E. H. Hitchings, Native Plants,	1 00

JULY 30.

HYBRID PERPETUAL ROSES.—Twenty-five blooms, Francis B. Hayes,	5 00
CUT FLOWERS.—Display, filling 100 bottles, Mrs. E. M. Gill,	4 00
Second, George Craft,	3 00
Third, W. K. Wood,	2 00
Collection of not less than eighteen named species of Annuals and Herbaceous Perennials, Mrs. E. S. Joyce,	3 00
Second, George Craft,	2 00
VASE OF FLOWERS.—Best arranged, in one of the Society's glass vases, Mrs. A. D. Wood,	2 00
Second, James O'Brien,	1 00

Gratuities:—

Francis B. Hayes, Hydrangeas,	3 00
John B. Moore, Phloxes and Hollyhocks,	1 00

Francis B. Hayes, Display of Flowers, ... $2 00
E. Sheppard, " " " 1 00
George Craft, " " " 1 00
R. B. Cummings, Bouquets of Native Flowers, ... 1 00

AUGUST 6.

PERENNIAL PHLOXES.—Ten distinct named varieties, one spike each,
John B. Moore & Co., ... 3 00
Second, John B. Moore & Co., ... 2 00
PETUNIAS.—Collection, filling 30 bottles, Edwin Fewkes, . . 3 00
Second, James Nugent, ... 2 00
Third, George Craft, ... 1 00
CUT FLOWERS.—Display, filling 100 bottles, Mrs. E. M. Gill, . . 4 00
Second, W. K. Wood, ... 3 00
Third, C. W. Ross, ... 2 00
NATIVE FLOWERS.—Collection, Mrs. C. N. S. Horner, . . . 3 00
Second, Mrs. A. J. Dolbear, ... 2 00

Gratuities:—
J. S. Richards, Gladioli, ... 1 00
Francis B. Hayes, Display of Flowers, ... 2 00
Hovey & Co., " " " 1 00
E. Sheppard, " " " 2 00
Mrs. E. S. Joyce, " " " 1 00
R. B. Cummings, Bouquet of Native Flowers, ... 1 00

AUGUST 13.

PHLOX DRUMMONDI.—Fifty bottles, not less than six varieties,
James Nugent, ... 3 00
Second, James Cartwright, ... 2 00
CUT FLOWERS.—Not less than eighteen named species of Annuals and Herbaceous Perennials, Hovey & Co , ... 3 00
Second, George Craft, ... 2 00

Gratuities:—
John L. Gardner, Orchids, ... 3 00
George Craft, Gladioli, ... 2 00
Henry R. Comley, Dianthus, ... 1 00
John B. Moore & Co., Gladioli, ... 1 00
J. W. Manning, Phloxes, ... 1 00
E. Sheppard, Dahlias, ... 1 00
A. P. Calder, *Nymphæa odorata*, var. *rosea*, ... 1 00
Francis B. Hayes, Display of Flowers, ... 3 00
Mrs. E. M. Gill, " " " 1 00
W. K. Wood, " " " 1 00
Miss E. M. Harris, Design of Ferns and Native Flowers, . . 1 00

AUGUST 20.

ASTERS. — Large Flowered, or Victoria,—Thirty blooms, not less than ten varieties, John L. Gardner,	$4 00
Second, James Nugent,	3 00
Third, Francis B. Hayes,	2 00
Chrysanthemum. — Thirty blooms, not less than eight varieties, John L. Gardner,	4 00
Victoria, or Chrysanthemum, or both.—Six plants in pots, John L. Gardner,	4 00
Pompon.—Six plants in pots, F. Skinner, Jr.,	4 00
SWEET PEAS.—Display, filling 25 bottles, Mrs. A. D. Wood,	3 00
Second, George Craft,	2 00
BASKET OF FLOWERS.—Best arranged, Mrs. E. M. Gill,	2 00
Gratuities: —	
Francis B. Hayes, New Begonias,	2 00
" " Display of Flowers,	3 00
John B. Moore & Co., " " "	2 00
B. G. Smith, " " "	1 00

AUGUST 20.

GLADIOLI.—Twenty named varieties, in spikes, J. F. Marble,	6 00
Ten named varieties, in spikes, George Craft,	4 00
Second, John B. Moore & Co.,	5 00
Six named varieties, in spikes, R. T. Jackson,	3 00
Single spike, named, Franklin Bacheller,	1 00
Display of named and unnamed varieties, filling 100 bottles, James Cartwright,	6 00
Second, George Craft,	4 00
Third, Herbert Gleason,	2 00
Gratuities: —	
E. Sheppard, Dahlias and Pelargoniums,	1 00
John L. Gardner, Dahlias,	1 00
Mrs. A. D. Wood, Display of Flowers,	2 00
Mrs. E. M. Gill, " " "	2 00
Hovey & Co., " " "	1 00
Mrs. E. S. Joyce, " " "	1 00

AUGUST 27.

TROPÆOLUMS.—Display filling 25 bottles, William H. Spooner,	3 00
Second, Francis B. Hayes,	2 00
CUT FLOWERS.—Display filling 100 bottles, Mrs. E. M. Gill,	4 00
Second, Edwin Fewkes,	3 00
Third, Mrs. A. D. Wood,	2 00

Gratuities:

James Cartwright, Gladioli, ... $2 00
George Craft, " 2 00
John L. Gardner, Asters, ... 1 00
James Nugent, Asters and Tropæolums, ... 1 00
E. Sheppard, New Dahlias and Phloxes, ... 2 00
Francis B. Hayes, Display of Flowers, ... 2 00
John B Moore & Co., " " " 2 00
Miss M. E. Carter, Native Flowers, ... 1 00

SEPTEMBER 3.

HYBRID PERPETUAL ROSES.—Twenty-five blooms, Francis B. Hayes, 3 00
DOUBLE ZINNIAS.—Twenty flowers, not less than six varieties, Francis B. Hayes, ... 4 00
Second, George Craft 3 00
Third, James Nugent, ... 2 00
DIANTHUS.—Annual and Biennial varieties,—collection filling 50 bottles, Henry R. Comley, ... 3 00
Second, Hovey & Co., ... 2 00
MARIGOLDS.—Twenty-five bottles, three flowers in each, Hovey & Co., 3 00
Second, Francis B. Hayes, ... 2 00
Third, George Craft, ... 1 00
CLEMATIS.—Display of cut blooms, Francis B. Hayes, . . . 3 00

Gratuities:

George Craft, Gladioli, ... 2 00
Mrs. A. D. Wood, Display of Flowers, ... 2 00
Mrs. L. P. Weston, " " " 1 00
Mrs. C. N. S. Horner, Native Flowers, ... 2 00

ANNUAL EXHIBITION.

SEPTEMBER 13, 14, 15, and 16.

Special Prizes.

OFFERED BY A MEMBER OF THE SOCIETY.

TWELVE STOVE AND GREENHOUSE PLANTS.—Ornamental Foliage, in not over twelve-inch pots, S. R. Payson, Silver Cup, value, $40 00
Second, F. L. Ames, Silver Cup, value, ... 25 00

OFFERED BY AN AMATEUR.

TEN STOVE AND GREENHOUSE PLANTS. — Five foliage and five in bloom, in not over ten-inch pots, not more than one orchid admissible, F. L. Ames, Silver Cup, value, ... 40 00
Second, H. H. Hunnewell, Silver Cup, value, ... 20 00

Subscription Prize.

DAHLIAS.—For the best twenty-four dissimilar blooms, E. Sheppard & Son, Piece of Plate, value, ... $10 00

Society's Prizes.

GREENHOUSE PLANTS.—Twelve Greenhouse and Stove Plants of different varieties, one Dracæna and one Croton admissible, H. H. Hunnewell, ... 30 00
Second, S. R. Payson, ... 25 00
SPECIMEN FLOWERING PLANT.—Francis B. Hayes, ... 5 00
Second, John L. Gardner, ... 4 00
VARIEGATED LEAVED PLANTS.—Six varieties not offered in the collection of greenhouse plants, Dracænas not admissible, H. H. Hunnewell, ... 12 00
Single specimen, not offered in any collection, H. H. Hunnewell, 5 00
Second, John L. Gardner, ... 4 00
CALADIUMS.—Six varieties, E. Sheppard & Son, ... 5 00
Second, Hovey & Co., ... 4 00
FERNS.—Six named varieties, J. Warren Merrill, ... 6 00
Second, F. L. Ames, ... 4 00
ADIANTUMS.—Six varieties, S. R. Payson, ... 6 00
Second, Hovey & Co., ... 4 00
TREE FERN.—Single Specimen, J. Warren Merrill, . . . 6 00
Second, Francis B. Hayes, ... 4 00
LYCOPODS.—Four named varieties, William Gray, Jr., . . . 3 00
DRACÆNAS.—Six named varieties, H. H. Hunnewell, . . . 8 00
PALM.—Single specimen, F. L. Ames, ... 5 00
Second, H. H. Hunnewell, ... 4 00
NEPENTHES.—Three plants, named, F. L. Ames, ... 6 00
AGAVES.—Six distinct varieties, John C. Hovey, ... 6 00
Second, Hovey & Co., ... 4 00
CACTI.—Twelve species and varieties, Benjamin Gray, . . . 5 00
SUCCULENTS.—Collection, of twelve species, other than Agaves, Yuccas, or Cacti, John C. Hovey, ... 5 00
BEGONIAS.—Tuberous-rooted,—Six named varieties, Francis B. Hayes, ... 5 00
GLADIOLI —Best display, and best kept during the exhibition, of named and unnamed varieties, filling 100 bottles, James Cartwright, ... 10 00
Second, A. McLaren, ... 8 00
DAHLIAS.—Twelve named varieties, John L. Gardner, . . . 5 00
Second, S. G. Stone, ... 4 00
Six named varieties, James Nugent, ... 3 00
Second, S. G. Stone, ... 2 00
Third, O. B. Hadwen, ... 1 00
Single named flower, Fancy or Self, John L. Gardner, . . . 2 00
Second, James Nugent, ... 1 00

Liliputian Dahlias.—General display, filling 25 bottles, J. F. Marble,	$3 00
Second, S. G. Stone,	2 00
Cut Flowers.—Best display, and best kept during the exhibition, filling 100 bottles, Mrs. A. D. Wood,	16 00
Second, Mrs. E. M. Gill,	14 00
Third, Hovey & Co.,	12 00
Basket of Flowers.—Best arranged and best kept during the Exhibition, Mrs. E. S. Joyce,	5 00
Gratuities:—	
Francis B. Hayes, Collection of Plants,	8 00
H. H. Hunnewell, " " "	6 00
Miss Pratt, " " "	5 00
John L. Gardner, " " "	4 00
William S. Ewell, " " "	4 00
Hovey & Co., " " "	4 00
Benjamin Gray, Nymphæas,	3 00
E. Haskell, "	1 00
Arnold Arboretum, Foliage of Hardy Trees and Shrubs,	5 00
John L. Gardner, Caladiums,	2 00
Hovey & Co., Succulents,	2 00
Norton Brothers, Gladioli,	2 00
L. W. Goodell, Dahlias and Gladioli,	1 00
Samuel G. Stone, Dahlias,	2 00
Edwin Sheppard, "	1 00
O. B. Hadwen, "	1 00
William S. Ewell, Hanging Baskets,	5 00
" " " Cut Flowers,	3 00
Miss A. C. Kenrick, Dish of Flowers,	1 00
Miss E. M. Harris, Stand of Flowers,	4 00
Henry R. Comley, Dianthus,	1 00
Robert Manning, *Cornus mascula*,	1 00
Francis B. Hayes, Display of Flowers,	5 00
C. W. Ross, " " "	3 00
James Nugent, " " "	3 00
Hovey & Co., " " "	1 00
J. W. Manning, " " "	1 00
Mrs. A. D. Wood, " " "	1 00
Miss M. E. Carter, Native Flowers,	3 00
Mrs. C. N. S. Horner, " "	3 00
Mrs. Catherine Starbuck, Native Plants,	1 00
E. H. Hitchings, " "	1 00

October 1.

Dahlias.—Twelve named varieties, E. Sheppard,	5 00
Second, John Parker,	4 00
Third, Hovey & Co.,	3 00

Six named varieties, James Nugent,	$3 00
Second, E. Sheppard,	2 00
Third, Miss C. Smith,	1 00
Vase of Flowers.—Mrs. E. M. Gill,	4 00
Second, Mrs. A. D. Wood,	3 00

CHRYSANTHEMUM SHOW.

November 9.

Chrysanthemums.—Six Large Flowered, or Chinese, H. L. Higginson,	8 00
Second, H. P. Walcott,	6 00
Six Japanese varieties, H. P. Walcott,	8 00
Second, H. L. Higginson,	6 00
Four Pompon varieties, H. L. Higginson,	4 00
Second, H. P. Walcott,	3 00
Six Large Flowered, or Chinese, in six-inch pots, H. L. Higginson,	5 00
Second, Patrick Malley,	3 00
Specimen Plant, Large Flowered, or Chinese, H. L. Higginson,	4 00
Second, H. P. Walcott,	3 00
Specimen Plant, Japanese, H. L. Higginson,	4 00
Second, H. P. Walcott,	3 00
Specimen Plant, Anemone Flowered, H. L. Higginson,	3 00
Second, H. P. Walcott,	2 00
Specimen Plant, Pompon, H. L. Higginson,	3 00
Second, H. P. Walcott,	2 00
Twelve Cut Blooms, Large Flowered, or Chinese, H. P. Walcott,	4 00
Second, E. W. Wood,	3 00
Six Cut Blooms, Large Flowered, or Chinese, Benjamin G. Smith,	3 00
Second, H. P. Walcott,	2 00
Twelve Sprays of Pompons, H. P. Walcott,	2 00
Second, E. W. Wood,	1 00
Six Sprays of Japanese, H. P. Walcott,	3 00
Second, E. W. Wood,	2 00
Display of named varieties of any or all classes, 30 bottles, H. P. Walcott,	4 00
Second, E. W. Wood,	3 00
Orchids.—Three varieties, in bloom, F. L. Ames,	8 00
Second, F. L. Ames,	6 00
Single plant, in bloom, F. L. Ames,	4 00
Second, John L. Gardner,	3 00
Hand Bouquets.—Pair, James Nugent,	2 00
Second, Mrs. E. M. Gill,	1 00

Gratuities:

Norton Brothers,	Chrysanthemum	Plants,	$6 00
H. L. Higginson,	"	"	5 00
E. Sheppard,	"	Flowers,	1 00
Mrs. E. M. Gill,	"	"	1 00
Francis B. Hayes,	Display of	Flowers,	5 00
F. L. Ames,	Plants,		5 00

NOVEMBER 26.

Gratuity:

H. L. Higginson, *Eucharis Amazonica*, ... 3 00

DECEMBER 17.

Gratuity:

Francis B. Hayes, Display of Flowers, ... 2 00

SILVER MEDALS.

January 15. Francis B. Hayes, Collection of Epacris.

February 5. John L. Gardner, Collection of Primulas.

" " James Cartwright, *Sophronitis grandiflora.*

March 5. James Cartwright, *Dendrobium Wardianum.*

Azalea and Rose Show, March 17. F. L. Ames, Orchids.

May 7. Francis B. Hayes, Collection of Ericas.

Rhododendron Show, June 4. Woolson & Co., Collection of Herbaceous Plants.

" " E. L. Beard, *Odontoglossum Roezlii.*

Rose Show, June 28. V. H. Hallock, Son, & Thorpe, Seedling Double Pelargoniums.

July 9. Francis Parkman, *Iris Kæmpferi* in variety.

July 23. John C. Hovey, Seedling Japanese Hollyhocks.

August 13. Jackson Dawson, New Shrubs.

August 20. E. Haskell, Nymphæas in variety.

Annual Exhibition, September 13–16. William H. Spooner, Collection of Nasturtiums and Tropæolums.

" " David Allan, gardener to Miss Pratt, *Lastrea Richardsii multifida.*

" " F. L. Harris, Seedling Dracænas.

" " Jacob W. Manning, Collection of Evergreens.

Chrysanthemum Show, November 9. F. L. Ames, *Anthurium Andreanum.*

" " Miss E. H. Craft, Design of Autumn Flowers.

December 3. John L. Gardner, *Odontoglossum grande.*

BRONZE MEDALS.

June 18. Francis B. Hayes, New Rhododendrons.

Annual Exhibition, September 13–16. W. C. Strong & Co , Collection of Hardy Trees and Shrubs.

" " Samuel Smith, Collection of Single Dahlias.

FIRST CLASS CERTIFICATES OF MERIT.

February 5. Francis B. Hayes, New Rose, George Bancroft.
February 12. " " " Clematis in Pots.
March 5. Marshall P. Wilder, Seedling Azalea, Marshall Pinckney Wilder.
" " Jackson Dawson, *Andromeda Japonica.*
Azalea and Rose Show, March 17. Hovey & Co., Seedling Azaleas.
March 28. John B. Moore & Co., New Roses.
" " Hovey & Co., Chrysanthemums.
April 2. Jackson Dawson, *Rosa multiflora.*
April 30. E. L. Beard, Pansy Odier.
June 28. Francis B. Hayes, Rhododendrons and Roses.
Rose Show, June 28. V. H. Hallock, Son, & Thorpe, *Iris Kæmpferi* in variety.
" " " " F L. Ames, *Cypripedium superciliare.*
" " " " Eben Bacon, Tuberous-rooted Begonias.
" " " " J. Warren Merrill, New Ferns.
July 9. Edwin Fewkes, *Chrysanthemum carinatum.*
" " H. P. Walcott, Seedling Delphiniums.
" " Francis B. Hayes, *Lilium Takesima.*
July 23. " " " Tuberous-rooted Begonias.
" " " " " *Lilium longiflorum var.*
" " " " " Seedling Gloxinias.
August 6. John B. Moore & Co., Seedling Phlox, No. 12.
August 13. A. H. Fewkes, Seedling Hybrid Begonias.
" " E. Sheppard, Seedling Delphiniums.
August 20. J. W. Manning, Trees and Shrubs.
" " E. Sheppard, Seedling Gloxinias.
August 27. Hovey & Co., Fifty species and varieties of Trees and Shrubs.
" " W. C. Strong & Co., Foliage of Hardy Plants.
" " Francis B. Hayes, Rhododendron Princess Hélène.
" " George Craft, *Papaver umbrosum.*
September 3. O. W. Holmes, *Nelumbium luteum.*
Annual Exhibition, September 13–16. Henry Ross, *Alternanthera latifolia aurea.*
" " Hovey & Co., New Single Dahlias.
" " M. H. Simpson, Seedling Coleus.
October 1. Francis B. Hayes, *Stenocarpus Cunninghami.*
Chrysanthemum Show, November 9. F. L. Ames, *Ipomœa Horsfalliæ.*
" " H. P. Walcott, Seedling Chrysanthemums.

PROSPECTIVE PRIZE.

James F. C. Hyde, Hyde's White Gladiolus.

REPORT

OF THE

Committee on Fruits,

FOR THE YEAR 1881.

By E. W. WOOD, CHAIRMAN.

In reviewing the fruit exhibits of the past year, we can hardly claim that the result has realized the expectations which the opening season promised. Suffering from extreme cold during the winter of 1880–81 less than almost any other portion of our country, with the ground covered with snow continuously from November till March, a condition most favorable to the roots of fruit bearing plants, we found in the opening spring there had been little injury in the fruit gardens. The only cases reported were among peach trees in exceptionally unfavorable locations.

The season was later than usual, and the first unfavorable reports of the fruit crop came from various parts of the State, that the rust was more or less severely affecting the strawberries, some varieties suffering much more severely than others planted side by side under the same conditions.

STRAWBERRIES.—The Strawberry Exhibition, so far as quantity and appearance were concerned, was fully up to the standard of previous exhibitions, but in quality it was decidedly inferior; owing to the cool and cloudy weather while the fruit was maturing, it was wanting in that peculiar flavor which is the charm of this delicious fruit.

Several new varieties were shown, but none of marked prominence either for size or beauty, and the Committee hardly feel warranted in expressing an opinion as to quality until tried under more favorable conditions. The Sharpless, a comparatively new

berry, was shown in larger quantity than any other variety. Owing to its peculiar and unattractive form, and the objection made to some extent that it does not ripen evenly, it may be too early to express a decided opinion as to its desirability for general cultivation, but the fact that it will doubtless be more generally cultivated in this vicinity in the immediate future than any other of the new varieties, will soon secure for it its true relative position.

Cherries. — Owing to wet weather at the time of ripening, this fruit was shown in limited quantity and was confined to varieties previously exhibited.

Currants. — This fruit has been abundant and of good size and quality; the exhibits have been fully up to previous years in quantity and quality, but confined more exclusively to the two varieties, La Versaillaise and Dana's White Transparent; these are now very generally grown and may be considered the best representatives of the red and the white currant.

Raspberries. — The exhibits of this fruit were not up to the average of previous years, either in quality or quantity. The Franconia was the leading variety shown. This fruit deserves more attention from our small fruit growers; it is of easy culture and meets with a ready sale at good prices, there being little or no competition from distant growers, as it does not bear transportation long distances.

Blackberries. — This fruit was unusually late the past season, none being shown at either of the exhibitions when prizes were offered, though some very good specimens were subsequently shown. Many who formerly grew this fruit to a greater or less extent have given it up on account of the uncertainty of a crop, from the canes being killed during the winter. This fact suggests the inquiry whether we cannot, by crossing the Wachusett, or some other hardy variety, with the Dorchester or Kittatinny, secure the hardiness of the former combined with the size and flavor of the latter. Such a result would be a valuable acquisition to our small fruits.

Gooseberries were shown in about the usual quantity; the prizes for natives were awarded to Smith's Seedling and Downing's Seedling. Of foreign varieties, B. G. Smith showed some fine specimens.

Plums. — The continued increase in the number of varieties and quantity of this fruit, shows that more attention is being given to

its cultivation, and with good results. Many have been deterred from growing the plum on account of the frequent loss of the trees by the black wart, and the more frequent loss of the fruit by the curculio; but, as the means of combatting these enemies are becoming better known and more generally practised, we may reasonably expect an increase in this desirable fruit.

Peaches. — The Garden Committee, the past season, offered prizes for the best Peach Orchards, and as a result received invitations from growers in widely different localities, and will give you in their report the results of their examinations. The Fruit Committee can only supplement their report by saying that, while but few of the larger growers have been exhibitors, the quantity shown has been considerably in excess of that in previous years. One objection made by growers to going more extensively into peach culture, is the difficulty in getting healthy young trees. It is the exception rather than the rule to find a nursery of young trees one year old from the bud, where more or less are not affected with the yellows. This would suggest a more careful selection of seed and a more careful selection of buds with which to inoculate the stocks.

Grapes. — The past season has been the most unfavorable for this fruit known for many years. At the Annual Exhibition there were but three dishes of grapes shown in competition for the sixteen prizes offered. They were so severely injured by mildew that in many places the more hardy kinds — among them the Concord — dropped from the vines before maturing. Of the three varieties shown at the Annual Exhibition, but two were considered deserving a first prize; these were Moore's Early and the Cottage. At the exhibition on the 1st of October, first prizes were taken by the Concord, Delaware, Isabella, Moore's Early, and Francis B. Hayes. At this exhibition C. E. Grant showed a superior dish of the Catawba.

Foreign grapes were shown in about the usual quantity; there were some larger bunches than have been recently exhibited, but size had been secured at the expense of color. H. L. Higginson showed some finely colored fruit, and there were also well ripened bunches from John L. Gardner. A. W. Nickerson showed the largest clusters, and had they been well colored they would have been superior to any exhibited for several years.

Pears. — We have had more than an average crop of this fruit the past season, and the exhibits, taken as a whole, have been

above the average; but the Annual Exhibition being held at an earlier date than for several years, and the season being later than usual, the show of the later and larger varieties was far below the average. The October and November exhibitions were among the best we have ever had.

Apples.—This being the off year for this fruit, it was not expected the exhibits would compare favorably with those of last year, which was one of great abundance; but it is gratifying to be able to report the amount shown as considerably in excess of that exhibited in previous odd years. The great difference in the quantity of this fruit, with such unfailing regularity, upon the odd and even years, would suggest the inquiry whether by removing the blossoms from young trees on the even year, and selecting scions and buds from trees whose habit is to produce their fruit on the odd year, a greater equality cannot be secured.

Oranges, etc.—On the 9th of April we had a display of fruits, mostly of the genus Citrus, sent by the Southern California Horticultural Society, at the suggestion of Lucius G. Pratt, one of our members, when on a visit to California. They included oranges of several varieties, lemons, limes, shaddocks, and raisins, the last made from Muscat of Alexandria grapes, grown without irrigation, and of extra fine quality. The oranges, etc., though not as fresh as if they had not been exhibited in California, were of good appearance and fair quality, and the whole exhibit was of much interest. We have had no such display since April 11, 1840, when Charles W. Dabney, United States Consul at Fayal, an Honorary Member of the Society, sent from his own garden, where only in the islands some of them could be found, twelve varieties of citrons, oranges, lemons, and limes. A First Class Certificate of Merit was awarded by the Committee to Warren Kimball, of National City, Cal., for a Collection of Oranges, Prunes, and Raisins, and the same to R. G. Clark, of San Diego, for Raisins.

At the Annual Exhibition, D. S. Marvin, of Watertown, N. Y., entered his seedling grape, the Centennial, for the Prospective Prize for grapes. Of those previously entered for this prize, the Hayes was the only one to which the attention of the Committee was called.

Of the $950 placed at the disposal of the Committee for prizes and gratuities, they have awarded $749, leaving an unexpended balance of $201. The Committee felt bound to keep within their appropriation, and in offering their prizes adopted substantially

the list of former years under the same appropriation, and the reason for this unusually large unexpended balance is found in the comparatively small number of prizes awarded for grapes and apples.

Owing to the lateness of the season, the Committee voted, in conjunction with the Vegetable Committee, to postpone the award of all prizes one week, beginning with the exhibition of July 23, and including the last show before the Annual Exhibition. This step resulted in a decided improvement in the exhibitions.

The Secretary of the Society has kindly given the Committee the benefit of his experience by furnishing descriptions of new fruits, which will be annexed to this report.

Our fruit growers were sadly disappointed that, at the Annual Exhibition, our Grapes, Apples, and Pears, to a considerable extent, were shown under so unfavorable conditions; especially as that exhibition was held in connection with that of the American Pomological Society, whose exhibits embraced the fruits from widely different sections of our country, including those from California, in great variety. It would have been gratifying to our own exhibitors could they have shown to the large number of visitors from the different States what our fruit gardens and orchards produce in a favorable season.

The fact that more than usual disappointment has attended the efforts of fruit growers in this vicinity the past season should not discourage those engaged in fruit culture. These unfavorable climatic influences are exceptional and less liable to occur than disappointment in almost any other pursuit. Remembering that our fruits already form an important article in domestic economy and furnish a luxury for our tables through the entire year, we may reasonably expect that with enlarged and more systematic methods of cultivation, improved means for shipping our fruits to foreign markets, a home market constantly increasing, and a location the most favorable for export trade, fruit growing will become one of the important industries of the State.

Respectfully submitted,

E. W. Wood,
Benj. G. Smith,
Warren Fenno,
C. F. Curtis,
P. B. Hovey,
Jacob W. Manning,

Fruit Committee.

NOTES ON NEW FRUITS.

By Robert Manning, Secretary.

Apple. *Highland Beauty.*—A seedling from the Lady apple, raised by E. P. Roe, of Cornwall-on-the-Hudson, N. Y., and exhibited by Hon. Marshall P. Wilder, February 5. Small, flattened, somewhat irregular and angular, but hardly ribbed; one side higher than the other. Skin clear, smooth yellow, thinly dotted with irregular russet specks; toward the sun brilliant carmine, dotted with obscure fawn-colored dots, the yellow ground showing distinct and well defined where overlaid by a leaf. Skin, thin; flesh, white, tender, not very juicy, very mild sub-acid; quality, "good," but probably the specimens were a little too ripe to show its best. In size it surpasses its parent, but not in quality.

Pears. *Earle's Bergamot.*—A seedling raised by the late Hon. John Milton Earle, of Worcester, Mass.; exhibited by Edward W. Lincoln, at the Annual Exhibition, September 13–16. Medium size, globular obtuse pyriform. Skin, thick; color, dull green,—sometimes yellow,—with a dull brownish red cheek, and patches of bronzy russet in the sun; in the shade, thinly sprinkled with russet dots of varying size. Flesh, greenish white, very melting and juicy, with a rich and pleasant flavor. "Very good."

Clapp's Seedling, No. 107.—From Hon. Marshall P. Wilder, October 22. Large, oblong pyriform, somewhat irregular and variable. Color, pale yellow; general appearance not unlike that of the Bartlett. Flesh, very fine grained and juicy, acidulous, not high flavored. It has a fragrance resembling that of the Lawrence.

Grape. *Duchess.*—Grown by A. J. Caywood, Poughkeepsie, N. Y.; presented by Hon. Marshall P. Wilder. The bunches shown were small, and pretty compact; berry of small or medium size, round; color, pale green, in specimens exposed to the sun inclining to amber, with a decided bloom. Texture "meaty" or sometimes with a little pulp, juicy, and sweet throughout the pulp, in the last point showing a decided step in advance. The skin is thick, and it would probably keep and carry well.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

FEBRUARY 12.

Gratuity : —

Warren Fenno, Josephine de Malines Pears, ... $1 00

MARCH 17.

WINTER PEARS.—Any variety, Warren Fenno, Josephine de Malines, 3 00
Second, Warren Fenno, Duchesse de Bordeaux, . . . 2 00
WINTER APPLES.—Any variety, W. T. Hall, Northern Spy, . . 3 00
Second, Warren Fenno, Northern Spy, ... 2 00

Gratuities : —

A. D. Capen, Collection of Pears, ... 1 00
S. Hartwell, " " Apples, ... 1 00
George Craft, " " " 1 00
B. G. Smith, " " " 1 00
C. E. Grant, " " " and Pears, ... 1 00
R. Manning, " " " " " 1 00

JUNE 11.

Gratuity : —

John C. Gray, Apricots, ... 3 00

JUNE 18.

Gratuity : —

Aaron D. Capen, Strawberries, ... 1 00

JUNE 25.

Gratuity : —

Charles Garfield, Hervey Davis Strawberries, ... 1 00

ROSE AND STRAWBERRY SHOW.

JUNE 28.

STRAWBERRIES. — Four quarts of any variety, J. F. C. Hyde, Sharpless, Silver Cup, value, ... $25 00
Four quarts Charles Downing, William Doran & Son, . . . 3 00
Second, Aaron D. Capen, ... 2 00
Cumberland Triumph, J. B. Moore & Co., ... 3 00
Hervey Davis, J. B. Moore & Co., ... 3 00

President Lincoln, J. B. Moore & Co.,	$3 00
Sharpless, Warren Heustis,	3 00
Second, J. F. C. Hyde,	2 00
Triomphe de Gand, the second prize to Charles Garfield,	2 00
Two quarts Brighton Pine, Warren Fenno,	2 00
Caroline, C. E. Grant,	2 00
Charles Downing, Warren Heustis,	2 00
Second, Stanley Seaverns,	1 00
Cumberland Triumph, J. B. Moore & Co ,	2 00
Second, Horace Eaton,	1 00
Cutter's Seedling, E. W. Wood,	2 00
Duchess, Joseph D. Fitts, Providence, R. I.,	2 00
Hervey Davis, the second prize to Charles Garfield,	1 00
Jucunda, C. E. Grant,	2 00
Miner's Great Prolific, J. B. Moore & Co.,	2 00
Second, Aaron D. Capen,	1 00
Pioneer, Marshall P. Wilder,	2 00
President Wilder, Marshall P. Wilder,	2 00
Sharpless, L. W. Weston,	2 00
Second, J. F. C. Hyde,	1 00
Any other variety, Joseph D. Fitts, Champion,	2 00
Collection, not less than six varieties, one quart each, Hovey & Co.,	4 00
Two new named varieties, not previously exhibited, G. H. & J. H. Hale, South Glastonbury, Conn.,	3 00
Second, Hovey & Co.,	2 00
Fifty berries, any variety, Warren Heustis, Sharpless,	2 00
CHERRIES. — Two quarts of any variety, Isaac P. Langworthy,	2 00
Second, C. E. Grant,	1 00

Gratuities: —

J. B. Moore & Co., Collection of Strawberries,	2 00
C. E. Grant, " " "	2 00

JULY 2.

CHERRIES. — Two quarts Black Eagle, C. E. Grant,	2 00
Black Tartarian, C. E. Grant,	2 00
Coe's Transparent, Thomas S. Lockwood,	2 00
Any other variety, C. E. Grant, Black Heart,	2 00
Second, C. E. Grant, Elton,	1 00
STRAWBERRIES. — Two quarts, any late variety, Warren Heustis,	2 00
Second, Horace Eaton,	1 00

Gratuities: —

M. W. Chadbourne, Collection of Strawberries,	2 00
C. E. Grant, " " "	1 00
Warren Fenno, " " "	1 00
B. G. Smith, " " " and Cherries,	1 00

A. D. Capen, Collection of Cherries, ... $1 00
John C. Gray, Peach tree in fruit, ... 3 00

JULY 9.

CURRANTS.—Four quarts, B. G. Smith, Dana's Transparent. . . 2 00

Gratuities: —

Charles Garfield, Triomphe de Gand Strawberries, ... 1 00
Thomas S. Lockwood, Collection of Cherries, ... 2 00
Horace Partridge, " " " 1 00

JULY 16.

RASPBERRIES. — Two quarts, any variety, B. G. Smith, Franconia, 2 00
Second, William Doran & Son, ... 1 00
CURRANTS. — Two quarts Dana's Transparent, Mrs. E. M. Gill, . 2 00
Second, M. W. Chadbourne, ... 1 00
La Versaillaise, B. G. Smith, ... 2 00
Second, William Doran & Son, ... 1 00
Victoria, B. G. Smith, ... 2 00
Black Naples, B. G. Smith, ... 2 00
CHERRIES. — Any variety, Charles F. Curtis, Hyde's Seedling, . 2 00
Second, C. E. Grant, Downer's Late, ... 1 00

Gratuities:—

Warren Fenno, Collection of Cherries, Currants, and Raspberries, 1 00
M. W. Chadbourne, Currants, ... 1 00

JULY 23.

Gratuities: —

Horace Partridge, Cherries and Pears, ... 1 00
C. N. Brackett, Seedling Cherries, ... 1 00
N. B. White, Currants, ... 1 00
C. E. Grant, " 1 00
M. W. Chadbourne, Currants, ... 1 00
Charles Garfield, " 2 00
William Doran & Son, " and Raspberries, ... 2 00
Aaron D Capen, Raspberries 1 00
Warren Fenno, " 1 00
J. B. Moore & Co., Gooseberries, ... 1 00
Mrs. E. M. Gill, " and Currants, ... 2 00
Alexander Dickinson, Doyenne d'Été Pears, ... 1 00
Marshall P. Wilder, Amiré Joannet Pears, ... 1 00
B. G. Smith, June Berries, ... 1 00

JULY 30.

GOOSEBERRIES. — Two quarts Native, B. G. Smith, Smith's Seedling, 2 00
Second, Warren Fenno, Downing's Seedling, ... 1 00
PEARS. — Doyenne d'Été, Warren Heustis, ... 2 00
Second, B. G. Smith, ... 1 00

Gratuities: —

Charles Garfield, Raspberries, Gooseberries, and Currants,	$1 00
George Craft, Gooseberries,	1 00
William E. Coffin, Peaches,	1 00
F. J. Dutcher, Apricots,	1 00
Francis B. Hayes, Black Hamburg Grapes,	2 00
R. P. Walsh, Figs,	1 00
Edwin Fewkes, Pineapple,	2 00

AUGUST 6.

PEARS. — Any variety, Alexander Dickinson, Beurre Giffard,	2 00
Second, Warren Fenno, " "	1 00
GOOSEBERRIES. — Two quarts Foreign, B. G. Smith, Whitesmith,	2 00
Second, B. G. Smith, Bang-Up,	1 00

Gratuities: —

Charles Garfield, Currants, Raspberries, and Gooseberries,	1 00
Warren Fenno, Gooseberries,	1 00
Horace Eaton, " and Peaches,	1 00
A. S. McIntosh, Dorchester Blackberries,	1 00
James Nugent, " "	1 00
Miss Sarah M. Vose, " "	1 00
T. Putnam Symonds, Alexander Peaches,	1 00
C. E. Grant, Peaches,	1 00
Francis B. Hayes, Black Hamburg Grapes,	2 00

AUGUST 13.

PEARS. — Beurre Giffard, Mrs. Mary Langmaid,	2 00
Second, W. S. Janvrin,	1 00
APPLES. — Early Harvest, Horace Eaton,	2 00
Second, Warren Fenno,	1 00
Red Astrachan, Horace Eaton,	2 00
Second, J. T. Foster,	1 00
Large Yellow Bough, Warren Heustis,	2 00
Second, Warren Fenno,	1 00
Williams, Warren Heustis,	2 00
Second, B. G. Smith,	1 00

Gratuities: —

Charles Garfield, Blackberries,	1 00
James Nugent, "	1 00
A. S. McIntosh, "	1 00
A. M. Davenport, Alexander Peaches,	1 00
C. E. Grant, Hale's Early and Amsden Peaches,	1 00
Samuel Hartwell, Early Beatrice Peaches,	1 00

AUGUST 20.

PEARS. — Clapp's Favorite, John C. Park,	$2 00
Second, W. S. Janvrin,	1 00
Any other variety, C. N. Brackett, Brandywine,	2 00
Second, Hovey & Co., Suprême de Quimper,	1 00
FIGS. — Any variety, R. P. Walsh,	2 00

Gratuities: —

J. B. Johnson, Blackberries,	1 00
Warren Fenno, Pears,	1 00
Hovey & Co., "	1 00
Mrs. Mary Langmaid, Pears,	1 00
M. W. Chadbourne, " and Apples,	1 00
J. T. Foster, Apples,	1 00
C. C. Shaw, "	1 00
Caleb Bates, Hale's Early Peaches,	1 00

AUGUST 27.

PEARS. — Bartlett, Mrs. Mary Langmaid,	2 00
Second, Alexander Dickinson,	1 00
Manning's Elizabeth, Charles Bird,	2 00
Second, Alexander Dickinson,	1 00
Rostiezer, John C. Park,	2 00
Second, Horace Eaton,	1 00
Tyson, John C. Park,	2 00
Second, A. S. McIntosh,	1 00
PLUMS. — Any variety, Richard Walsh, Washington,	2 00
Second, D. Tucker, Bradshaw,	1 00
PEACHES. — Any variety, Richard Walsh, Dr. Hogg,	2 00
Second, A. M. Davenport, Early Rivers,	1 00

Gratuities: —

Warren Fenno, Apples, Peaches, and Apricots,	1 00
B. G. Smith, Pears and Apples,	1 00

SEPTEMBER 3.

APPLES. — Any variety, B. G. Smith, Williams,	2 00
Second, Warren Fenno, Gravenstein,	1 00
PEARS. — Bartlett, Alexander Dickinson,	2 00
Second, Mrs. Mary Langmaid,	1 00
Any other variety, Warren Fenno, Brandywine,	2 00
Second, Hovey & Co., Doyenne Boussock,	1 00
PLUMS. — Collection, not less than four varieties, Mrs. H. V. Draper,	3 00
Second, Horace Eaton,	2 00
Any one variety, Mrs. H. V. Draper, Washington,	2 00
Second, H. M. Wiswall, Bradshaw,	1 00

Gratuities: —

A. S. McIntosh, Collection of Pears,	$1 00
A. M. Davenport, Hale's Early Peaches,	1 00
M. W. Chadbourne, Peaches and Pears,	1 00

SEPTEMBER 10.

APPLES. — Foundling, the second prize to Warren Fenno,	1 00
Gravenstein, the second prize to Warren Fenno,	1 00
Any other variety, the second prize to Warren Fenno, for Maiden's Blush,	1 00
PEARS. — Andrews, Mrs. Mary Langmaid,	2 00
Second, T. M. Davis,	1 00
Doyenne Boussock, Charles Bird,	2 00
Second, Warren Fenno,	1 00
Any other variety, M. W. Chadbourne, Souvenir du Congrès,	2 00
Second, Warren Fenno,	1 00
PEACHES. — Any variety, A. S. McIntosh, Crawford's Early,	2 00
Second, J. B. Moore & Co.,	1 00

Gratuities: —

F. J. Dutcher, Collection of Plums,	1 00
Horace Partridge, Bradshaw Plums,	1 00

ANNUAL EXHIBITION.

SEPTEMBER 13, 14, 15, AND 16.

Special Prizes.

Twelve Bartlett Pears, Mrs. Mary Langmaid,	5 00
Twelve Gravenstein Apples, C. C. Shaw,	5 00
Twelve Peaches, of any variety, F. Bayer, Crawford's Early,	5 00
Twelve Bunches of Native Grapes, J. B. Moore & Co., Moore's Early,	5 00

Regular Prizes.

APPLES. — Baldwin, J. T. Foster,	2 00
Second, C. C. Shaw,	1 00
Danvers Winter Sweet, C. C. Shaw,	2 00
Second, J. T. Foster,	1 00
Dutch Codlin, B. F. Hunt, Jr.,	2 00
Second, B. G. Smith,	1 00
Foundling, Warren Fenno,	2 00
Garden Royal, C. C. Shaw,	2 00
Golden Russet, " "	2 00
Second, Warren Fenno,	1 00
Gravenstein, William T. Hall,	2 00
Second, C. C. Shaw,	1 00

Hubbardston Nonsuch, M. W. Chadbourne,	$2 00
Second, J. T. Foster,	1 00
King of Tompkins County, Hovey & Co.,	2 00
Second, C. C. Shaw,	1 00
Lady's Sweet, the second prize to Warren Fenno.	1 00
Leicester Sweet, O. B. Hadwen,	2 00
Lyscom, O. B. Hadwen,	2 00
Maiden's Blush, Warren Fenno,	2 00
Second, C. C. Shaw,	1 00
Mother, John Cummings,	2 00
Northern Spy, C. C. Shaw,	2 00
Second, Warren Fenno,	1 00
Porter, A. S. McIntosh,	2 00
Second, M. W. Chadbourne,	1 00
Rhode Island Greening, A. S. McIntosh,	2 00
Second, John L. D'Wolf,	1 00
Roxbury Russet, John L. D'Wolf,	2 00
Second, C. C. Shaw,	1 00
Talman's Sweet, J. T. Foster,	2 00
Second, Josiah Crosby,	1 00
Washington Strawberry, John C. Park,	2 00
Second, Warren Fenno,	1 00
Crab Apples. — Hyslop, M. W. Chadbourne,	2 00
Second, B. F. Hunt, Jr.,	1 00
Transcendent, B. F. Hunt, Jr.,	2 00
Second, Warren Fenno,	1 00
Any other variety, Warren Fenno, Dartmouth,	2 00
Pears. — Bartlett, Alexander Dickinson,	2 00
Second, John L. Bird,	1 00
Belle Lucrative, John C. Park,	2 00
Second, Horace Partridge,	1 00
Beurre d'Anjou, Mrs. Mary Langmaid,	2 00
Second, William T. Hall,	1 00
Beurre Bosc, John L. Bird,	2 00
Second, Horace Partridge,	1 00
Beurre Clairgeau, William T. Hall,	2 00
Second, Charles Bird,	1 00
Beurre Hardy, Warren Fenno,	2 00
Second, Marshall P. Wilder,	1 00
Beurre Superfin, John C. Park,	2 00
Second, Warren Fenno,	1 00
Dana's Hovey, Hovey & Co.,	2 00
Second, B. G. Smith,	1 00
Doyenne Boussock, E. W. Wood,	2 00
Second, John Cummings,	1 00
Doyenne du Comice, Warren Fenno,	2 00
Second, William A. Crafts,	1 00

Duchesse d'Angouleme, Mrs. Mary Langmaid,	$2 00
Second, Warren Fenno,	1 00
Goo ale, C. E. Grant,	2 00
Second, Warren Fenno,	1 00
Howell, John Cummings,	2 00
Second, John C. Park,	1 00
Lawrence, Horace Partridge,	2 00
Second, William T. Hall.	1 00
Louise Bonne of Jersey, John McClure,	2 00
Second, Mrs. Mary Langmaid,	1 00
Marie Louise, John L. D'Wolf,	2 00
Second, S. G. Damon,	1 00
Merriam, A. S. McIntosh,	2 00
Second, William A. Crafts,	1 00
Onondaga or Swan's Orange, Horace Eaton,	2 00
Second, Warren Fenno,	1 00
Paradis d'Automne, Marshall P. Wilder,	2 00
Second, John L. Bird,	1 00
Seckel, C. E. Grant,	2 00
Second, Alexander Dickinson,	1 00
Sheldon, Mrs. Mary T. Goddard,	2 00
Second, Mrs. Mary Langmaid,	1 00
Souvenir du Congrès, Horace Eaton,	2 00
Second, Warren Fenno,	1 00
St. Michael Archangel, W. C. Eustis,	2 00
Second, Marshall P. Wilder,	1 00
Urbaniste, Horace Partridge,	2 00
Second, E. W. Wood,	1 00
Vicar of Winkfield, the second prize to W. C. Eustis,	1 00
Winter Nelis, John L. Bird,	2 00
Second, John C. Park,	1 00
Any other variety, Marshall P. Wilder, Clapp's Favorite,	2 00
Second, Moses Darling, Jr., Kingsessing,	1 00
PEACHES. — Four varieties, the third prize to Alexander Dickinson,	4 00
Fourth, Samuel Hartwell,	3 00
Any one variety, A. S. McIntosh,	3 00
Second, J. B. Moore & Co.,	2 00
Third, Samuel Hartwell,	1 00
Orchard House Culture, Richard Walsh,	4 00
Second, Richard Walsh,	3 00
NECTARINES. — Any variety, Warren Fenno,	2 00
PLUMS. — Any variety, Mrs. H. V. Draper,	2 00
Second, B. G. Smith,	1 00
NATIVE GRAPES. — Delaware, the second prize to J. B. Moore & Co.,	1 00
Moore's Early, J. B. Moore & Co.,	2 00
Any other variety, J. W. Talbot, Cottage,	2 00

Foreign Grapes. — Four varieties, two bunches each, H. L. Higginson,	$8 00
Two varieties, two bunches each, A. W. Nickerson,	4 00
Two bunches of any Black Grape, H. L. Higginson,	4 00
Second, A. W. Nickerson,	3 00
Third, J. L. Gardner,	2 00
Two bunches of any White Grape, J. L. Gardner,	4 00
Second, H. L. Higginson,	3 00
Gratuities: —	
C. C. Shaw, Collection of Apples,	3 00
Stephen Salisbury, Dix Pears,	1 00
Marshall P. Wilder, Collection of New Pears,	2 00
C. N. Brackett, Collection of Pears,	3 00
M. W. Chadbourne, " " "	3 00
B. F. Hunt, Jr., " " "	2 00
Horace Partridge, " " "	2 00
Francis B. Hayes, " " "	2 00
C. E. Grant, " " "	2 00
John Ward, " " "	1 00
J. C. Lovell, Peaches,	1 00
R. P. Walsh, Plums, Nectarines, and Peaches,	3 00
J. C. Lovell, Worden Grapes,	1 00
Francis B. Hayes, Figs,	2 00

September 24.

Gratuities: —	
C. N. Brackett, Pears,	1 00
N. D. Harrington, Pears and Peaches,	1 00
C. E. Grant, Grapes, Pears, and Peaches,	3 00
Samuel Hartwell, Peaches,	1 00
J. B. Moore & Co, Peaches and Grapes,	3 00
Charles Garfield, " " "	1 00

October 1.

Pears. — Beurre Bosc, Horace Partridge,	2 00
Second, John L. Bird,	1 00
Beurre Clairgeau, William T. Hall,	2 00
Second, Jesse Haley,	1 00
Beurre Diel, Alexander Dickinson,	2 00
Second, T. M. Davis,	1 00
Beurre Superfin, Warren Fenno,	2 00
Second, Mrs. H. P. Kendrick,	1 00
Doyenne du Comice, Warren Fenno,	2 00
Second, W. S. Janvrin,	1 00
Duchesse d'Angouleme, John McClure,	2 00
Second, Alexander Dickinson,	1 00
Frederick Clapp, Marshall P. Wilder,	2 00

Louise Bonne of Jersey, John McClure,	$2 00
Second, T. M. Davis,	1 00
Sheldon, Mrs H. P. Kendrick,	2 00
Second, John McClure,	1 00
Urbaniste, Horace Partridge,	2 00
Second, A. S. McIntosh,	1 00
Any other variety, S & C. Cummings, Seckel,	2 00
Second, Warren Fenno, Beurre Hardy,	1 00
Apples — Gravenstein, William T. Hall,	2 00
Second, Warren Fenno,	1 00
Porter, M. W. Chadbourne,	2 00
Second, A. S. McIntosh,	1 00
Any other variety, Warren Fenno, Washington Strawberry,	2 00
Second, Moses Darling, Jr., Maiden's Blush,	1 00
Quinces. — Any variety, B. G. Smith,	2 00
Second, Horace Eaton,	1 00
Native Grapes. — Six bunches of Concord, William Doran & Son,	2 00
Second, Charles Garfield,	1 00
Delaware, S. G. Damon,	2 00
Second, Horace Eaton,	1 00
Diana, the second prize to S. G. Damon,	1 00
Isabella, J. W. Wellington,	2 00
Massasoit, the second prize to Joseph S. Chase,	1 00
Moore's Early, J. B. Moore & Co.,	2 00
Second, Charles Garfield,	1 00
Any other variety, J. B. Moore & Co., Francis B. Hayes,	2 00
Second, C. E. Grant, Catawba,	1 00
Foreign Grapes. — Two bunches, any variety, E. W. Wood, Black Hamburg,	3 00
Second, B. G. Smith, Muscat Hamburg,	2 00

Gratuities: —

C. E. Grant, Collection of Pears,	3 00
William T. Hall, " " "	2 00
C. N. Brackett, " " "	2 00
Horace Partridge, " " "	1 00
Warren Fenno, " " "	1 00
Jesse Haley, " " "	1 00
B. F. Hunt, Jr., " " " and Apples,	1 00
Aaron D. Capen, Pears,	1 00
S. G. Damon, "	1 00
B. G. Smith, "	1 00
M. W. Chadbourne "	1 00
Mrs. E. M. Gill, "	1 00
T. M. Davis, "	1 00
Charles Bird, "	1 00
E. G. Tutein, "	1 00

N. D. Harrington, Pears,	$1 00
A. S. McIntosh, " and Apples,	2 00
Marshall P. Wilder, Seedling Pears,	2 00
A. S. McIntosh, Peaches,	1 00
Samuel Hartwell, "	1 00
J. B. Moore & Co., "	1 00
Mrs. M. T. Goddard, "	1 00
M. Darling, Jr., "	1 00
A. M. Davenport, "	1 00
Warren Fenno, "	1 00
Charles Garfield, Seedling Peaches,	1 00

October 8.

Gratuities: —

O. B. Hadwen, Pears,	1 00
N. D. Harrington, Peaches and Pears,	1 00
R. P. Walsh, Peaches and Nectarines,	2 00
Charles H. Parker, Peaches,	1 00
W. W. Nichols, Seedling Peaches,	1 00
Samuel Hartwell, Peaches,	1 00

October 15.

Gratuities: —

J. Gardner, Pears,	1 00
A. S. McIntosh, "	2 00
C. E. Grant, Grapes, Pears, and Peaches,	2 00
M. Darling, Jr., Peaches,	1 00

October 22.

Gratuities: —

M. W. Chadbourne, Pears,	1 00
N. D. Harrington, Pears and Quinces,	1 00
C. E Grant, Collection of Grapes,	1 00

October 29.

Gratuities: —

Mrs. H. V. Draper, Pears,	1 00
Walter Channing, "	1 00
Nathaniel Rudd, Peaches,	1 00

November 9.

Pears. — Beurre d'Anjou, Warren Fenno,	2 00
Second, William T. Hall,	1 00
Beurre d'Aremberg, Aaron D. Capen,	2 00
Second, Marshall P. Wilder,	1 00
Beurre Langelier, Jacob Eaton,	2 00
Second, T. M. Davis,	1 00

Dana's Hovey, Hovey & Co.,	$2 00
Second, A. S. McIntosh,	1 00
Doyenne du Comice, Warren Fenno,	2 00
Second, George S. Harwood,	1 00
Glout Morceau, A. S. McIntosh,	2 00
Second, Samuel McIntosh,	1 00
Josephine de Malines, Warren Fenno,	2 00
Second, John L. Bird,	1 00
Lawrence, W. S. Janvrin,	2 00
Second, Jesse Haley,	1 00
Vicar of Winkfield, W. P. Walker,	2 00
Second, A. S. McIntosh,	1 00
Winter Nelis, T. M. Davis,	2 00
Second, Jacob Eaton,	1 00
Any other variety, Warren Fenno,	2 00
Second, M. Darling, Jr.,	1 00

French Premiums.

Apples. — Baldwin, J. T. Foster,	2 00
Second, M. W. Chadbourne,	1 00
Danvers Winter Sweet, J. T. Foster,	2 00
Second, C. C. Shaw,	1 00
Hubbardston Nonsuch, M. W. Chadbourne.	2 00
Second, C. C. Shaw,	1 00
King of Tompkins County, Hovey & Co.,	2 00
Second, C. C Shaw,	1 00
Lady's Sweet, Warren Fenno,	2 00
Northern Spy, C. C. Shaw,	2 00
Second, Warren Fenno,	1 00
Rhode Island Greening, the second prize to A. S. McIntosh,	1 00
Roxbury Russet, M. W. Chadbourne,	2 00
Second, Mrs. M. T. Goddard,	1 00
Talman's Sweet, J. T. Foster,	2 00
Second, M. Darling, Jr.,	1 00

Gratuities: —

C. E. Grant, Collection of Pears,	3 00
Marshall P. Wilder, " " "	3 00
A. S. McIntosh, Pears,	2 00
B. G. Smith, "	1 00
T. M. Davis, "	1 00
Lemuel Clapp, "	1 00
M. W. Chadbourne, "	1 00
George S. Harwood, "	1 00
Horace Partridge, " and Grapes,	2 00
Warren Fenno, " " Apples,	1 00
C. C. Shaw, Apples,	1 00
B. G. Smith, Lady Downes Grapes,	1 00

FIRST CLASS CERTIFICATES OF MERIT.

April 9. Warren Kimball, National City, Cal., Collection of Oranges, Prunes, and Raisins.

April 9. R. G. Clark, San Diego, Cal., Raisins.

Rose and Strawberry Show, June 28, E. S. Durand, Irvington, N. J., Jersey Queen Strawberries.

July 30. William C. Strong, Gregg (Black Cap) Raspberries.

August 20. H. H. Hunnewell, Stanwick Nectarines.

REPORT

OF THE

COMMITTEE ON VEGETABLES.

FOR THE YEAR 1881.

By CHARLES N. BRACKETT, Chairman.

The season of 1881 has proved one of a peculiar character, and will long be remembered by cultivators of the soil on account of its many changes and surprises.

The spring was remarkably cold, wet, and backward, and vegetation came forward with a slow, and somewhat uncertain pace. Many of the more tender varieties of vegetable and other seeds, owing to unpropitious weather at the time of planting, failed to germinate, and necessitated replanting, thereby causing delay, loss, and disappointment to the cultivator. In many localities the crops of squashes, melons, etc., were total failures. In other sections acres of growing crops were severely damaged, and in some instances totally ruined, by heavy showers accompanied by wind and hail, which also did more or less injury to the fruit crop.

The effects of weather, so unfavorable to vegetation, could scarcely fail to be noticed in our weekly exhibitions, which have during the past year, notwithstanding the persevering efforts of contributors, been inferior to those of the two previous seasons.

From the commencement of the year to the Azalea Exhibition, March 17, gratuities were awarded for vegetables grown under glass, to Josiah Crosby, Henry R. Comley, John B. Moore, Cephas H. Brackett, and W. H. Richardson, who were the only contributors of forced vegetables for a period of over three months. To those exhibitors who still persevere in their efforts to keep alive this interesting feature of our exhibitions during the winter and early spring months, the thanks of the Society are due, while from those who appear from some cause to have lost their interest, or have become discouraged, and have dropped away, we must hope for better things in the future.

The weekly shows were affected in a marked manner by the lateness of the season. Tomatoes, which are usually exhibited in

perfection during the month of July, when prizes are first offered, were this season not shown until the middle of August, and no really fine specimens were seen before August 13. Greenflesh melons were called for by the Schedule on the 6th of August, but none were shown until September 3. Sweet corn, beans, etc., were also nearly two weeks behind the usual time.

By the middle of July it was found that few if any of the prizes offered would be awarded unless the dates in the Schedule were changed so as to conform more nearly to the requirements of the season. Consequently the Fruit and Vegetable Committees, after consultation, voted to change the dates of the Schedule in their respective departments, making them one week later for the remainder of the season, commencing with July 23, and so on, up to the Annual Exhibition. Contributors were accordingly notified. This change as anticipated had the desired effect, and a decided improvement was noticeable thereafter in all the exhibitions.

The shows of Peas although somewhat later than usual have been fine. In addition to old and standard kinds, some of the most promising of more recent introduction were to be seen on exhibition. A new variety, the Marvel, shown by C. M. Atkinson, July 16, attracted much attention. Mr. Atkinson says of this variety, "it was sown on the 30th of April; it is a sturdy grower, an enormous cropper, of a beautiful color when boiled, and of most delicious flavor. I am impressed that it is the very best pea for mid-season supply." Very fine specimens of Omega were shown on the same date by James Cartwright. At the Rose Show the first and second prizes for peas were awarded to Samuel G. Stone, and Samuel Hartwell for Kentish Invicta.

May 7 and 14, James Bard, gardener to Harvey D. Parker, exhibited a new variety of Tomato, which originated with him, called the Parker House Favorite. The specimens were unusually choice and beautiful ones, and attracted particular notice on this account. Mr. Bard says it is the best variety of all for forcing, and a very heavy cropper. For the season of the year at which they were shown, they were decidedly the best specimens we have ever seen on exhibition.

At the Annual Exhibition some very fine specimens of Livingston's Perfection, were shown by George H. Rich, who took the first prize for the best three varieties; and a new variety, the Mayflower, from B. K. Bliss & Sons, took the first prize for any other variety than those named in the Schedule. The Mayflower

is a large, handsome, solid variety, somewhat after the style of the Paragon, but said to be earlier than that variety. The shows of tomatoes, at the weekly exhibitions and at the annual, were remarkably full and fine. The Acme has been the leading variety, while the Paragon, Emery, and other favorites have been well represented.

The improvement which the past few years have wrought in this popular vegetable has been both striking and gratifying, and by contrasting the hollow and wrinkled specimens which we used to see offered for prizes ten or twelve years ago, with the perfect and very beautiful specimens to be seen this season at our exhibitions, its extent will in some degree be appreciated.

These remarks apply equally well to other of our garden vegetables, especially to the potato, and the various root crops, where equal progress has been made.

The display at the Annual Exhibition surpassed expectation, it being thought the unpropitious season would tell severely upon the various crops, and, as a natural consequence, affect unfavorably the Annual Show. In a partial degree this was the result, but not to the extent anticipated.

Notwithstanding the unfavorable season the display of Potatoes at the Annual Exhibition was superior to that of the previous year, the varieties being more select, and the specimens better grown. The main crop however was seriously injured, during the month of August, by blight, which from all accounts appears to have been general throughout the country. The loss accruing from this cause, must in the aggregate, have been very great. Early planted varieties, however, escaped the blight, which would seem to be a sufficient argument in favor of early planting.

We are indebted to E. S. Brownell, of Essex Junction, Vermont, for a collection of new seedling potatoes, exhibited by him at the Annual Exhibition, under numbers running from 50 to 55 inclusive, three of which have been named by the originator, and will be introduced to the public the coming season. We append the following description of them, as furnished by Mr. Brownell:

Brownell's Early Telephone (No. 52), I consider one of the best potatoes that I have ever raised. The vines are light green, stocky, of medium height, somewhat bushy. The tubers are white, smooth, of good size, and grow compactly in the hill, with few small ones, and cook well. Quality excellent, and it is very productive.

Brownell's Best (No. 50). Stalks medium, color dark green;

tubers white, somewhat flattened; eyes nearly even with the surface. The tubers grow compactly in the hill, and are of good size. It is early and very productive. It cooks evenly through, is very white and floury, and in quality not excelled.

Brownell's Early Mayflower (No. 54) is a variety of superior quality and very productive. The vines are short, thick and stocky; foliage a bright green color. The tubers are oblong in shape, large size, white, and cook very dry and floury. It is a vigorous and healthy grower.

Medals were awarded Mr. Brownell for the above-named varieties, at the New York State Fair, the past season. He is certainly entitled to great credit for his efforts and endeavors to originate new and improved varieties of this valuable esculent. It is only after four or five years' cultivation that the true character of a new seedling can be well ascertained; and when it is well established in the mind of the cultivator, it requires nearly as many years more to convince the public of it, so that establishing the reputation of a potato is, after all, a work of many years. Mr Brownell has, we understand, many other seedlings, which, if they shall prove on further trial equal to expectations already entertained of them, will be properly named, and in due time introduced to the public. Your Committee awarded Mr. Brownell, for six varieties of new seedling potatoes, the Society's Silver Medal.

Having thus briefly alluded to some of the most noticeable features of our exhibitions during the past year, we close our report with the annexed list of awards.

The amount appropriated for prizes and gratuities was	$500 00
Income from the Whitcomb Fund, ...	30 00
	$530 00
Amount awarded in prizes and gratuities, . . .	476 00
Leaving an unexpended balance of	$54 00

All of which is respectfully submitted.

C. N. Brackett,
Josiah Crosby,
Walter Russell,
George W. Pierce,
Samuel Hartwell,
C. E. Grant,
M. W. Chadbourne,

Committee on Vegetables.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

JANUARY 29.

Gratuity: —

Josiah Crosby, Celery, ... $1 00

FEBRUARY 12.

Gratuities: —

Henry R. Comley, Radishes, ... 1 00
John B. Moore, Mushrooms, ... 1 00

FEBRUARY 19.

Gratuity: —

C. H. Brackett, Tomatoes and Rhubarb, ... 2 00

FEBRUARY 26.

Gratuity: —

W. H. Richardson, Pierson's Long Green Cucumber, . . . 1 00

AZALEA AND ROSE EXHIBITION.

MARCH 17.

RADISHES. — Four bunches Turnip Rooted, Josiah Crosby, . . $3 00
CUCUMBERS. — Pair of White Spine, C. H. Brackett, . . . 3 00
LETTUCE. — Four heads of Tennisball, J. Crosby, ... 3 00
Second, H. R. Comley, ... 2 00

Gratuity: —

C. H. Brackett, Rhubarb and Tomatoes, ... 2 00

MARCH 26.

Gratuity: —

Josiah Crosby, Lettuce and Radishes, ... 1 00

APRIL 9.

Gratuities: —

Henry R. Comley, Lettuce, ... 1 00
E. W. Wood, " 1 00

APRIL 16.

Gratuities: —

Henry R. Comley, Lettuce, ... 1 00
Josiah Crosby, " 1 00
George W. Pierce, " 1 00
Charles Garfield, " 1 00

MAY 7.

Gratuities: —

J. Crosby, Collection,	$2 00
Aaron D. Capen, Rhubarb,	1 00
Charles Garfield, Lettuce,	1 00

MAY 14.

Gratuities: —

M. W. Chadbourne, Asparagus,	1 00
J. Crosby, Radishes,	1 00
Marshall P. Wilder, Sion House Cucumber,	1 00
John B. Moore, Asparagus, (new hybrid),	1 00
Samuel Hartwell, Asparagus,	1 00
James Bard, Tomatoes, (new hybrid, very fine),	1 00

MAY 21.

Gratuity: —

James Bard, Parker House Favorite Tomatoes,	1 00

JUNE 4.

CARROTS. — Twelve Short Scarlet, J. Crosby,	2 00
RADISHES. — Twelve Turnip Rooted, J. Crosby,	2 00
ASPARAGUS. — Four bunches, J. B. Moore,	2 00
Second, L. W. Weston,	1 00
CUCUMBERS. — Pair, C. H. Brackett,	2 00
Second, Josiah Crosby,	1 00
LETTUCE. — Four heads, Josiah Crosby, Tennisball,	2 00
Second, Josiah Crosby, Boston Curled,	1 00
RHUBARB. — Twelve stalks, John C. Hovey, Monarch,	2 00
Second, Samuel Hartwell, Victoria,	1 00

Gratuities: —

Cephas H. Brackett, Collection,	1 00
Charles Garfield, "	1 00
M. W. Chadbourne, Rhubarb,	1 00

JUNE 11.

Gratuity: —

Josiah Crosby, Collection,	2 00

JUNE 25.

Gratuities: —

Samuel Hartwell, Challenge Peas,	1 00
M. W. Chadbourne, Peas,	1 00

ROSE AND STRAWBERRY SHOW.

June 28.

Beets. — Turnip Rooted, Walter Russell,	$2 00
Second, J. Fillebrown,	1 00
Egyptian, J. Crosby,	2 00
Second, S. G. Stone,	1 00
Carrots. — Intermediate, J. Crosby,	2 00
Second, W. Russell,	1 00
Onions. — Twelve, J. Crosby,	2 00
Second, J. Fillebrown,	1 00
Cucumbers. — Pair of White Spine, J. Crosby,	2 00
Second, C. H. Brackett,	1 00
Cabbages. — Four, Walter Russell,	2 00
Second, Josiah Crosby,	1 00
Lettuce. — Four heads, George W. Pierce,	2 00
Second, Walter Russell,	1 00
Peas. — Peck, S. G. Stone, Kentish Invicta,	2 00
Second, Samuel Hartwell, " "	1 00

Gratuities:—

Samuel Hartwell, Challenge Peas,	1 00
M. W. Chadbourne, Peas,	1 00
C. E. Grant, "	1 00
C. H. Brackett, Cucumbers,	1 00
George W. Pierce, Lettuce,	1 00
J. Crosby, Collection,	1 00

July 2.

Peas. — Peck, S. G. Stone, Invicta,	2 00
Second, " " Laxton's Alpha,	1 00

July 9.

Gratuities:—

M. W. Chadbourne, Collection,	1 00
Samuel G. Stone, "	2 00
Josiah Crosby, Portugal Onions,	1 00

July 16.

Gratuities:—

Josiah Crosby, Summer Squashes,	2 00
M. W. Chadbourne, Beauty of Hebron Potatoes,	2 00
C. M. Atkinson, Marvel Peas,	1 00
James Cartwright, Omega Peas,	1 00
Samuel G. Stone, Collection of Beans,	1 00

JULY 23.

Gratuities:—

Marshall P. Wilder, Cucumbers,	$1 00
C. E. Grant, Marblehead Corn,	1 00
W. H. Spooner, Wax Date Beans,	1 00
S. G. Stone, Collection,	3 00
M. W. Chadbourne, Collection,	2 00

JULY 30.

SQUASHES. — Four Marrow, J. Crosby,	3 00
SWEET CORN. — Twelve ears, Samuel G. Stone, Marblehead,	3 00
Second, Samuel Hartwell, Narragansett,	2 00
Third, C. E. Grant, Marblehead,	1 00

Gratuities:—

C. E. Grant, Squashes,	1 00
M. W. Chadbourne, Clark's No. 1 Potatoes,	1 00
Josiah Crosby, Onions,	1 00
James Comley, Laxton's Supreme and Blue Peter Peas,	1 00

AUGUST 6.

SQUASHES. — Four Marrow, Josiah Crosby,	2 00
SWEET CORN. — Twelve ears, Josiah Crosby,	2 00
Second, Samuel Hartwell,	1 00
TOMATOES. — Gen. Grant, M. W. Chadbourne,	2 00

Gratuities:—

L. W. Weston, Collection,	2 00
C. E. Grant, Sweet Corn,	1 00
J Crosby, Beauty of Hebron Potatoes,	1 00
M. W. Chadbourne, Clark's No. 1 Potatoes,	1 00

AUGUST 13.

Gratuities:—

Samuel Hartwell, Burr's Corn,	1 00
L. W. Weston, Weston's Early Corn,	1 00
M. W. Chadbourne, Crosby "	1 00
C. N. Brackett, Acme and Emery Tomatoes,	2 00
Samuel G. Stone, Collection,	3 00
C. E. Grant, "	2 00

AUGUST 20.

Gratuities:—

M. W. Chadbourne, Collection,	2 00
S. G. Stone, "	2 00
Samuel Hartwell, Corn,	1 00

Charles Garfield, Tomatoes, ... $1 00
C. N. Brackett, Acme Tomatoes, ... 1 00
Warren Henstis, " " 1 00

AUGUST 27.

POTATOES. — Peck of any variety, S. Hartwell, Beauty of Hebron, . 2 00
Second, C. N. Brackett, Clark's No. 1, ... 1 00
BEANS. — Large Lima, C. E. Grant, ... 3 00
Second, B. G. Smith, ... 2 00

Gratuities: —

George Hill, Greenflesh Melons, ... 2 00
Samuel Hartwell, Burr's Corn, ... 1 00
C. N. Brackett, two varieties Tomatoes, ... 1 00
Samuel G Stone, Collection, ... 3 00
C. E. Grant, " 2 00
M. W. Chadbourne, " 2 00
Charles Garfield " 1 00

SEPTEMBER 3.

GREENFLESH MELONS. — Four specimens, George Hill, . . . 3 00

Gratuities: —

Josiah Crosby, Peppers and Corn, ... 2 00
C. N. Brackett, Beans and Tomatoes, ... 1 00
George Craft, Martynias, ... 1 00
C. E. Grant, Collection, ... 2 00
S. G. Stone, " 2 00
M. W. Chadbourne, " 1 00
Charles Garfield, " 1 00

SEPTEMBER 10.

Gratuities: —

C. N. Brackett, Emery Tomatoes, ... 1 00
Samuel Hartwell, Lima Beans, ... 1 00
C. E. Grant, Collection, ... 1 00
M. W. Chadbourne, " 1 00
S. G. Stone, " 1 00

ANNUAL EXHIBITION.

SEPTEMBER 13, 14, 15, AND 16.

Special Prizes.

CAULIFLOWERS. — Best four specimens, J. Cummings, . . . $5 00
CELERY. — Four specimens, Josiah Crosby, ... 5 00

Regular Prizes.

BEETS. — Twelve, J. Crosby, ... 3 00
Second, George F. Stone, ... 2 00
Third, Walter Russell, ... 1 00

CARROTS. — Twelve Long Orange, W. W. Rawson,	$3 00
Second, John L. D'Wolf,	2 00
Third, Walter Russell,	1 00
Twelve Intermediate, J. Crosby,	3 00
Second, W. Russell,	2 00
Third, John Cummings,	1 00
PARSNIPS. — Twelve Long, J. L. D'Wolf,	3 00
Second, Walter Russell,	2 00
Third, M. W. Chadbourne,	1 00
POTATOES. — Four varieties, one peck each, C. N. Brackett,	4 00
Second, Samuel Hartwell,	3 00
Third, Mrs. M. T. Goddard,	2 00
Early Rose, C. B. Lancaster,	3 00
Second, George W. Pierce,	2 00
Third, L. W. Weston,	1 00
Snowflake, J. L. D'Wolf,	3 00
Second, Mrs M. T. Goddard,	2 00
Any other variety, C. B. Lancaster, Clark's No. 1,	3 00
Second, J. L. D'Wolf, Beauty of Hebron,	2 00
Third, C. N. Brackett, Mammoth Pearl,	1 00
Collection of new Seedling varieties, E. S. Brownell, the Society's Silver Medal.	
SALSIFY. — Twelve specimens, J. L. D'Wolf,	3 00
Second, Walter Russell,	2 00
Third, M. W. Chadbourne,	1 00
TURNIPS. — Twelve Swedish, Mrs. M. T. Goddard,	3 00
ONIONS. — Peck of Danvers Yellow, J. Crosby,	3 00
Second, Walter Russell,	2 00
Third, J. Cummings,	1 00
Red, Walter Russell,	3 00
Second, J. Cummings,	2 00
Third, S. Hartwell,	1 00
White Portugal, Josiah Crosby,	3 00
Second, Walter Russell,	2 00
Third, S. Hartwell,	1 00
GREENFLESH MELONS. — Four, George Hill,	3 00
Second, I. P. Dickinson,	2 00
Third, John L. D'Wolf,	1 00
MUSKMELONS. — Four, I. P. Dickinson,	3 00
WATERMELONS. — Pair, I. P. Dickinson, Round Solid,	3 00
Second, I. P. Dickinson, Black Spanish,	2 00
Third, I. P. Dickinson, Peerless,	1 00
SQUASHES. — Four Canada, Mrs. M. T. Goddard,	3 00
Second, Josiah Pratt,	2 00
Third, Warren Fenno,	1 00
Hubbard, George Hill,	3 00
Second, Samuel Hartwell,	2 00
Third, John Cummings,	1 00

Marblehead, John Cummings,	$3 00
Marrow, George Hill,	3 00
Second, John Cummings,	2 00
Turban, John Cummings,	3 00
Second, Samuel Hartwell,	2 00
CABBAGES. — Three Drumhead, J. Cummings,	3 00
Second, J. B. Tilley,	2 00
Third, Samuel Hartwell,	1 00
Red, John Cummings,	3 00
Second, C. N. Brackett,	2 00
Third, M. T. Goddard,	1 00
Savoy, J. Cummings,	3 00
Second, Samuel Hartwell,	2 00
Third, W. D. Forbes,	1 00
CAULIFLOWERS. — Four, W. W. Rawson,	3 00
Second, Walter Russell,	2 00
Third, John Cummings,	1 00
CELERY. — Four roots, W. W. Rawson,	3 00
Second, Josiah Crosby,	2 00
ENDIVE. — Four heads, George W. Pierce,	2 00
HORSERADISH. — Six roots, W. W. Rawson,	3 00
Second, Walter Russell,	2 00
LIMA BEANS. — Two quarts, Samuel G. Stone,	3 00
Second, Benjamin G. Smith,	2 00
Third, C. E. Grant,	1 00
CORN. — Sweet, twelve ears, John Cummings,	3 00
Second, Robert Elder,	2 00
Third, Samuel Hartwell,	1 00
Yellow or Field, twenty-five ears, Mrs. M. T. Goddard,	3 00
Second, C. N. Brackett,	2 00
Third, Robert Elder,	1 00
EGG PLANT. — Four Round Purple, Walter Russell,	3 00
TOMATOES. — Three varieties, George H. Rich,	4 00
Second, C. N. Brackett,	3 00
Third, S. G. Stone,	2 00
Acme, Twelve specimens, John Cummings,	2 00
Second, George W. Pierce,	1 00
Boston Market, J. Cummings,	2 00
Second, Walter Russell,	1 00
Emery, J. Cummings,	2 00
Second, George W. Pierce,	1 00
Gen. Grant, John Cummings,	2 00
Second, C. E. Grant,	1 00
Any other variety, B. K. Bliss & Sons, Mayflower,	2 00
Second, John Cummings, Paragon,	1 00
MARTYNIAS. — Twenty-four, George W. Pierce,	2 00
Second, M. W. Chadbourne,	1 00

Peppers. — Twenty-four, George F. Stone,	$3 00
Second, Josiah Crosby,	2 00
Third, Walter Russell,	1 00
Cranberries. — Half-peck, O. M. Holmes,	2 00

Gratuities: —

I. P. Dickinson, Melons,	2 00
A. T. Brown, Egg Plants,	1 00
Henry R. Comley, Parsley,	1 00
John Cummings, Collection,	4 00
George W. Pierce, "	3 00
Walter Russell, "	3 00
Samuel Hartwell, "	2 00
C. E. Grant, "	2 00
L. W. Weston, "	1 00
W. D. Forbes, "	1 00
George Craft, "	1 00

September 24.

Gratuities: —

Samuel G. Stone, Collection,	2 00
C. N. Brackett, "	1 00
C. E. Grant, "	1 00

October 1.

Salsify. — Twelve specimens, M. W. Chadbourne,	2 00
Brussels Sprouts. — Half-peck, Mrs. M. T. Goddard,	2 00
Cabbages. — Three Drumhead, John Cummings,	2 00
Second, W. S. Janvrin,	1 00
Red, John Cummings,	2 00
Second, C. B. Lancaster,	1 00
Savoy, John Cummings,	2 00
Cauliflowers. — Four, John Cummings,	2 00
Celery. — Four roots, Josiah Crosby,	2 00

Gratuities: —

B. G. Smith, Lima Beans,	1 00
A. W. Nelson, Strawberry Tomatoes,	1 00
Samuel G. Stone, Collection,	3 00
C. E. Grant, "	2 00
Samuel Hartwell, "	1 00
C. N. Brackett, "	1 00

October 8.

Gratuity: —

Samuel G. Stone, Collection,	2 00

October 15.

Gratuity: —

C. E. Grant, Collection, ... $2 00

October 21.

Gratuity: —

Josiah Crosby, Celery, ... 2 00

November 5.

Gratuity: —

Josiah Crosby, Celery, ... 1 00

CHRYSANTHEMUM SHOW.

November 9.

Celery. — Four roots, Josiah Crosby, ... $2 00

Cauliflowers. — Four, John L. Gardner, ... 2 00

December 3.

Gratuity: —

Josiah Crosby, Celery, ... 1 00

REPORT

OF THE

Committee on Gardens,

FOR THE YEAR 1881.

By JOHN G. BARKER, Chairman.

Although the results of our efforts to awaken a more general interest in this department of the Society's work have not been altogether what we hoped for, the past season has shown a marked increase over the previous in the number of places to which the attention of the Committee has been called, and we trust the record of our doings, which we now present to you, will prove to be of sufficient interest to cause still greater activity on the part of all the members of the Society, and that each will do his best to facilitate the efforts of the Committee in obtaining any information that may be worthy of record, and may have a tendency to advance our cause. We call especial attention to the Hunnewell Triennial Premiums, and also to the Society's Prizes for the year to come, with the sincere hope that there may be an earnest competition for them all.

Pine Hill, the Residence of Hon. Francis B. Hayes.

Our first visit was on the 23d of June, to Lexington, upon invitation of our worthy President, to visit his extensive grounds. The day was all that could be desired, and in addition to the members of the Committee, we were honored with the presence of many of our distinguished horticulturists, and we noted with pleasure that of our worthy Ex-President, the Hon. Marshall P. Wilder, President of the American Pomological Society, whose kind and enthusiastic words proved to us that, while advancing in years, he is as young as ever in his zeal for the promotion of the

cause of horticulture, which has been to him one of the dearest objects of his life.

We hardly need to mention that we were received in the most generous and hospitable manner, of which many have had personal experience, more than once repeated. After a delightful repast prepared for us at the mansion house, we were escorted to the principal object of our visit, the Rhododendron tent, a structure fifty feet square, arranged in an artistic manner, and planted with the hybrid varieties of the Rhododendron. The eight standards were very conspicuous, the varieties being Lady Eleanor Cathcart, Concessum, Joseph Whitworth, Jean Verschaffelt, Vandyck, The Queen, Mrs. Milner, and Fastuosum flore pleno. These fine plants were among the most ornamental on the grounds, as all must admit, and standing as they did conspicuously above the dwarf varieties, with their well formed heads of beautiful flowers, they were objects of great admiration, and indeed when not in flower the beautiful glossy foliage is very effective. In addition to the standards there were over one hundred varieties of dwarf plants, many of them quite new and flowering for the first time in this country, in all shades of color, from a rich deep scarlet to pure white. We also noticed fine specimen plants in tubs of the beautiful *Bougainvillea glabra*, which were laden with lovely pink bracts. It deserves a place as a decorative plant in any choice collection. There was a very fine specimen of *Dracœna Draco*, a highly ornamental plant which may be brought out from the greenhouse among the earliest of plants; also a fine plant of *Alsophila excelsa*, one of the most beautiful greenhouse tree ferns; and an Azalea Exquisita, a very large specimen plant, probably the largest in this country, and a mass of bloom. But space forbids enumerating all the wealth of plants, beautiful in flower or foliage, with which the tent was crowded.

The general improvements on the whole estate since the Committee last visited the grounds, when the Hunnewell Triennial Premium was awarded, are very marked. A large conservatory, forty by sixty-five feet, has been erected, in the centre of which are three large camellias from the collection of the Hon. Marshall P. Wilder; the varieties are *Alba flore pleno* and *Feastii*. A fine specimen plant of the showy *Allamanda Schottii* was very noticeable. Also the beautiful *Nymphœa cœrulea*, *N. flava*, and *N. Devoniensis*, and *Aponogeton distachyon*, all of which can be grown in pots and tubs as well as in a tank, and are of very easy culture. It is

impossible to make more than brief mention of the objects that attracted our notice; there was a large collection of choice Azaleas selected with much care, and many other species and varieties that go to make up a choice collection of plants. We were informed that in future this conservatory will be used for the cultivation of rare summer flowering plants, and being situated very near the mansion house, it will undoubtedly be an interesting feature of the estate. The workmanship of the building is of the very best; in the arrangement there is no stage in the centre, it being filled with large plants; on the sides there is only low shelving, while at one end is a raised platform (access being had at either end by steps) on which are placed settees, where the visitor can sit down and look on the plants, the only way to see them properly. Connected with the conservatory is the vinery, where the vines were already in bearing, and their excellent condition was good proof of skilful cultivation received. We also noticed, near by, a small span-roofed house intended for growing roses, and numerous pits and frames, in which many of the Indian Azaleas are kept during winter, and which are always valuable adjuncts to a well ordered place.

Our attention was also directed to the pit, forty feet square, built in the woods; the sides are of stone, with large double doors in one end, which in winter are closed up tight, access being had through one of the skylights in the roof. In this pit are kept the Hybrid Rhododendrons, Indian Azaleas, Hollies, and all half-hardy plants. During the winter of 1880 the temperature was carefully looked after, and was kept at an average of 38°; two thermometers were hanging up, one at each end, showing that the temperature did not vary four degrees all through the season. Ventilation was given freely every mild day. This has proved a very gratifying success, and demonstrated the fact that it is not necessary to have extensive green and hot houses in order to grow and keep plants for summer decorative purposes.

In addition to what we have already noticed, we desire to mention some of the evergreens which have been planted out over two years, and have proved perfectly hardy.

Abies alba gloriosa.

Abies Engelmannii.—Indigenous to the higher parts of the Rocky mountains, and a very pretty species.

Abies orientalis.—Already known as a fine lawn tree, but of somewhat slow growth.

Abies macrophylla. — Mr. Hayes considers this one of the hardiest and best; it is very beautiful.

Abies pendula. — Certainly a very peculiar plant, but by no means handsome; it is perfectly hardy, and should have a place among evergreens.

Abies pyramidalis.

Abies Alcoquiana. — A splendid tree, and yet scarce.

Abies diffusa.

Picea Pichta. — A rather small species, with peculiar dark foliage; very hardy, and can be highly recommended for general cultivation.

Retinospora argentea. — A very distinct and desirable variety.

Retinospora filifera. — Also desirable; both this and the preceding were introduced from Japan.

Retinospora pisifera aurea, in a bed planted two years, produced a very pleasing effect. It is a beautiful plant, of compact habit, with branchlets of a bright golden color.

Among dwarf evergreens which attracted our attention more particularly were the three following varieties: *Abies nigra pumila*, *A. Hudsonia*, and *A. Gregoryana*.

Another evergreen of great merit, that has stood the test of several winters, is *Sciadopitys verticillata*, the Umbrella Pine of Japan, which bids fair to become one of the most popular ornamental evergreen trees.

Of deciduous trees, the curious *Aralia* (*Dimorphanthus*) *Mandschurica*, a perfectly hardy tree, with palm-like habit, is a remarkable novelty and will prove of great value in ornamental gardening.

Betula purpurea, the Purple Birch, is always very effective.

Magnolia hypoleuca is new.

Magnolia Alexandrina closely resembles *M. Soulangeana*.

Magnolia stellata (Hall's Japan Magnolia), Mr. Hayes informs us is the earliest and one of the best.

Pirus Malus floribunda.

Acer Negundo foliis aureo variegatis, the golden variegated Negundo.

Acer Negundo variegata. This is one of the most beautiful variegated trees, especially when so planted that evergreens form the background; Mr. Hayes's largest specimen is twelve feet high, and was spoken of by Mr. Parsons as one of the best he knew, and worth a journey from New York to see.

Of the new Japan Maples the following varieties, which have been planted out three years and have proved thoroughly hardy, seem to be among the valuable plants for future ornamental purposes, although in many localities it is far from settled what varieties will prove hardy.

Acer polymorphum reticulatum.
" " *albo variegatum.*
" " *palmatifolium roseo pictis.*
" " *versicolor.*
" " *sanguineum.*
" " *roseo marginatum.*
" " *palmatifidum.*
" " *pinnatifidum atropurpureum.*
" " *palmatum.*
" " *sanguineum variegatum.*
" " *aureum.*
" " *atropurpureum.*
" " *polymorphum.*
" *Japonicum.*

Of over fifty varieties of Clematis we noted the following six as most striking.

Froebel.
Jackmanni (intense violet purple).
James Bateman.
Prince of Wales.
Sieboldii.
William Bull.

Of Hybrid Perpetual Roses, about sixteen hundred plants, in two hundred of the most select varieties are cultivated.

Of flowering shrubs, we noticed the justly popular *Hydrangea paniculata grandiflora* in the highest perfection, both as standards and bushes. *Exochorda grandiflora* was very fine; *Spiræa Thunbergii* very delicate, and one of the best of the genus; *Weigela Lavalleei*, is an excellent variety, and *Viburnum plicatum* is one of the very best of the genus, the habit being particularly fine; Buist's Variegated Althæa, is very striking and effective, holding the variegation excellently, and must prove very useful. *Bignonia grandiflora præcox* is a magnificent plant, producing a great abundance of large deep coppery crimson flowers; very valuable and thoroughly hardy.

Having made special mention of such trees, shrubs, and plants as seem most desirable, we would add that the general improvement

of the entire estate is very noticeable. The avenue leading to the Pinetum has been planted on either side with choice evergreens, and in the grove, over two hundred of Van Houtte's seedling rhododendrons have been planted under the partial shade of the large trees. Returning by Maple Avenue we noticed that numerous beds had been cut out and planted with rhododendrons, and the choicest varieties of hardy shrubs, and it is only a matter of time when these beautiful avenues will be a very attractive feature of the place. The large masses of hardy rhododendrons near the entrance to the grounds were in fine order, as were also the hardy azaleas. The wide extent of lawn with a very commanding view of the pine woods from the piazza of the mansion house was exceedingly delightful. The neatly trimmed hedges which shut off the rear of the house from view, were in splendid condition. It was noticeable that there were but few beds of plants of the modern style, but here and there was a bed of Cannas, and then one of Geraniums and Coleus so placed as to give enchantment to a distant view. The fine sub-tropical bed at the front of the house deserves especial mention. It was composed of *Musas*, *Phormium tenax variegatum*, *P. Colensoi*, *P. atropurpureum*, *Ficus elastica*, *Grevillea robusta*, *Pandanus utilis*, *Agave Americana*, and *Yucca variegata*, the whole bed being carpeted with *Coleus* and *Achyranthes*, and edged with *Agave Americana variegata*. We also noticed in suitable places with good effect on the lawn, a fine pair of plants of *Fourcroya Lindeni;* also *Araucaria Cookii* and *A. excelsa*, *Musa ensete* and *Beaucarnea glauca*.

In selecting what we have for special notice, in a place so large, and where there is so much to attract attention, and all worthy of note, we trust that we have done no injustice to what remains unmentioned. We all admire the enthusiasm of our honored President, and we wish to record our thanks for what he has done for the advancement of the most beautiful of all arts, horticulture; and our earnest wish is that his life may long be spared to enjoy the fruits of his labors.

The Chairman also wishes to record his thanks to Mr. Comley, the accomplished and skilful gardener, to whom on a subsequent visit he was much indebted for the information obtained, and which has helped very much to make up this report.

Thomas C. Thurlow's Peach Orchard.

On the 27th of July the Committee visited the Peach Orchard of Thomas C. Thurlow, at West Newbury. The land selected for the orchard is the southern slope of a high hill and is not valued at over fifty dollars per acre; the space occupied being about three acres. The trees are eighteen feet apart each way and were planted in the spring of 1875, and at the time of planting a quart of wood ashes was worked in the ground around each tree. Mr. Thurlow thinks it essential that a vigorous growth should not be encouraged until the trees begin to bear. All the trimming that has ever been done was in the last of May or the first week in June, and consisted chiefly in cutting out dead wood. But a small quantity of fertilizing material has been used; half a ton of Pacific guano and a small quantity of the Darling fertilizer was applied this year, the whole not costing over fifty dollars. The cultivation has been done with the horse, and the ground has been hoed by hand but once.

The Committee were much pleased with the appearance of the trees; the growth and color of the wood, together with a moderate setting of fruit gave promise of a very fine crop, which we anticipated would give the most satisfactory results. At this time we could see but two trees that had any appearance of the yellows. But in a subsequent letter from Mr. Thurlow, under date of August 3d, we learned that the eight or ten trees of the early varieties were nearly a failure. The Alexander's Early ripened first, but nearly all rotted before they were fully ripe. Then one or two each of Early Louise and Early Rivers went about the same way. The Early Beatrice, which Mr. Thurlow considers the best early peach he has, was less affected by rot. In seeking to account for the rot, it was thought that the unusually wet weather at the time of ripening, together with the bees and other insects, was the cause. Mr. Thurlow has noticed large numbers of honey bees endeavoring to extract the juice from the fruit, and from that single spot on the fruit the rot set in and eventually the fruit would drop off the tree.

Under the same date, Mr. Thurlow informed us that the yellows had unfortunately broken out in the middle of the orchard, where the very best trees were situated; and that two years ago it broke out in the same way, and by then cutting down and carrying off

some twenty-five or more trees he had hoped that it was eradicated, but to his great disappointment it broke out this year immediately adjoining where it was in 1879, and thirty more of the very best trees have been sacrificed. Immediately after the removal of the trees, lime was put over the stumps of the same, and around them, and having attended to the liming very thoroughly, Mr. Thurlow hopes that he has now succeeded in checking this great scourge to the peach trees. He intends to lime his whole orchard next spring, besides putting ashes around each tree.

After all that has been written about the yellows, and a very thorough search for any information that could possibly be of any value on this point, we must confess that, like many others, we have not yet found the preventive or the remedy; but, if it is caused by a fungus, as many think it is, lime, in a caustic state, may prove beneficial, and, perhaps, if properly applied from the time of planting, may be a preventive. Mr. John Rutter, of Pennsylvania, a successful peach grower, and author of a work on peach culture, advocates such an application.

The committee again visited Mr. Thurlow on the 21st of September, and, although they did not find so much of a crop as might have been expected, they desire to mention the Crawford's Early as being particularly fine, and altogether the best flavored fruit; but, if nothing further happens to the trees, it seems highly probable that a good crop may be expected another season, as the wood was well ripened and in good bearing order. At that time the Crawford's Late also promised well. On the 4th of October Mr. Thurlow wrote that he had two trees of Osgood's Yellow, which were nice, and were full without rotting, promising much better than the Crawford's Late.

In the cultivation of this orchard Mr. Thurlow says, that if all the trees are destroyed now he is amply paid for the trouble he has been at, and has demonstrated the fact that peaches can be raised at little expense, and on land that would be of little or no value for anything else, as the following facts illustrate: The third year from planting, the fruit realized $100; the fourth year, $600; the fifth year, $50, and the sixth, $400; in fact, Mr. Thurlow is so sanguine in regard to cultivating peaches successfully and profitably, at a price that will bring them within reach of the masses, that he proposes to buy quite a farm on elevated ground, and devote it entirely to peach culture. The Committee award to Mr. Thurlow the first premium for the best peach orchard.

We desire, also, to mention the very excellent condition of Mr. Thurlow's nursery, and his systematic method of naming trees and shrubs, using every means to give the purchaser just what he orders, and the best that can be grown. We were much pleased with his fine bed of *Lilium longiflorum*, which at the time of our first visit was in full bloom, and was estimated to have at least two thousand flowers. It was well worth a trip to West Newbury to see.

Marshall Miles's Peach Orchard.

On the 24th of September the Committee visited the orchard of Marshall Miles, at Concord, Mass., which was, unfortunately, entered too late for premium. Mr. Miles has, however, at the request of the Chairman, transmitted an interesting statement, which is appended to this report.

As far as obtaining a crop is concerned, the trees in Mr. Miles's orchard were all very heavily laden with fruit, and each was a perfect picture, and the crop, as a whole, was such as we never saw before. Although Mr. Miles informed us that he had thinned out considerable, evidently too much was left on the trees for their future good, and flavor was largely sacrificed to abundance of crop. The cultivation is so well explained in Mr. Miles's statement, that it is not necessary to speak on that point. The appearance of the trees was good evidence of the success obtained. The Crawford's Early were being picked; the Crawford's Late promised well, but the Committee were of the unanimous opinion that the Oldmixons were by far the best. The visit to Mr. Miles was very gratifying to the Committee, inasmuch as he has, by energy and perseverance, fully proved that peaches can be successfully raised in our uncertain climate, and the Committee unanimously award to him a gratuity of $15 for successful cultivation of the peach.

John B. Moore's Peach Orchard and Vineyard.

The same day the Committee visited the grounds of John B. Moore, and it is needless to speak of the very excellent condition in which everything was found, as all who know Mr. Moore are fully aware of the superior methods of cultivation adopted by him, which his exhibits fully attest; the whole place was a model of neatness and good order. The young peach orchard promises much for the future, and the Crawford's Early, in size, and particularly in flavor,

were the best we have seen and tasted. The vineyard was in good order also. The Moore's Early grapes were particularly noticeable: the fine bunches and highly colored fruit were ample evidence that the value of this grape has not been over-estimated. The fine collection of hardy plants, particularly the Phloxes and Hybrid Perpetual Roses, was in excellent condition.

We desire to express our thanks to Mr. Thurlow for his unbounded kindness and hospitality; also to Mr. Moore and Mr. Miles for attentions shown the Committee.

Our thanks are also due to Major Ben: Perley Poore, of Indian Hill Farm, West Newbury, on the occasion of our second visit to Mr. Thurlow, for kind attention in showing the Committee what he had been able to accomplish on a waste, barren hill, where once hardly a blade of grass would grow, but which is now covered with a luxuriant growth of a great variety of forest trees, both deciduous and evergreen. We hope at some future time to be able to make a more extended report of this interesting place. Mr. Poore was some years ago awarded the premium of $1,000, by the Massachusetts Society for Promoting Agriculture, for the best plantation of oak trees.

In conclusion, we would suggest that the Committee be instructed to visit such places as contain objects of interest, from time to time, as they see fit, if not invited formally by the proprietors, and to make such reports as may be of interest to the Society, and promote the art of horticulture.

JOHN G. BARKER,
GEO. S. HARWOOD.
E. W. WOOD.
HENRY ROSS.
JOHN C. HOVEY.
C. N. BRACKETT.
WM. H. SPOONER.
} *Committee.*

STATEMENT OF MARSHALL MILES.

Gentlemen: —

The cultivation given the orchard I desire to enter for premium is as follows:

The land selected five years ago for my peach orchard consists of three and a half acres, entirely free from stones, the surface crowning in the centre, thus giving a gentle slope to nearly every point of the compass. The soil is a sandy loam, slightly alluvial, intermingled with clay to a depth of fifteen inches; the whole resting upon a subsoil of yellow loam. This land had been cultivated with crops in rotation, including grass, for many years, and had been manured with barnyard manure, but not liberally.

In preparation for setting the trees, the land, which was in grass, was ploughed in the fall, and again in the spring, and thoroughly pulverized. The four hundred trees, divided between the Crawford's Early, Crawford's Late, and Oldmixon Freestone, when set, were one year from the bud, and were set about the middle of May, six to ten inches deep, and twenty feet apart each way, so as to allow the sun access to the roots even when fully grown. Great care was used in placing the roots naturally and putting the earth in firm contact with every fibre. No manure of any kind was applied at the time of setting, but potatoes were immediately planted, manured with barnyard manure quite liberally, and hoed three times; they produced four hundred bushels of good potatoes. No other manure was applied to the trees the first year, but they were carefully trimmed and headed back sharply, so as to produce a good shape. This heading in has been continued in September every year. As soon as the ground was frozen, I mulched the trees with meadow hay, covering out beyond *all* the roots, carefully keeping the mulching in its place during the winter and until the season was confirmed, thus ensuring the protection of the buds from too early development. This mulching was renewed during midsummer, serving as a protection from drought while modifying the heat of the sun.

The second year I raised a crop of two hundred bushels (in the ear) of pop corn. It was manured with barnyard manure spread broadcast and ploughed in. No manure was applied directly to

the trees. The growth of the trees at this time was most vigorous, and they were carefully trimmed back.

The third year I raised a crop of white beans, which was manured in the hill with a little hen manure composted liberally with muck, producing fifty-one bushels of beans. During the season, which was a very unpropitious one, the trees grew rapidly, producing ten bushels of fruit. Great pains was taken to keep the growth shapely.

The fourth year the orchard was ploughed but not planted. About the 15th of May thirty bushels of air-slacked lime was dug in about the outer circle of the branches, thus reaching the small roots. In June a mixture of saltpetre waste and wood ashes was applied in the same manner. The crop set so abundantly that fearing to tax the trees too much, what would have been equivalent to one hundred bushels of fruit was picked off in a green state. The peach crop for that year was seventy-five bushels of very fine fruit.

Last year the crop of corn, potatoes, and beans, was manured in the hill; the corn and potatoes with a fertilizer composed of bone dust and muck, and the beans with hen manure and muck. The crop of peaches was twenty-five bushels of fair, large fruit, but this was not a peach year.

The present year I have planted no crop among the trees but have kept the ground as clean as I could conveniently, and about the middle of July I gave the orchard a light dressing of hen manure and wood ashes, and applied half a barrel of water to each tree, to assist in carrying out the crop. I thinned out a large quantity of green fruit, but think it would have been quite as well if I had taken out more, although the fruit is of good size and the trees have borne up remarkably well, very few of them having broken, owing in part to the very favorable weather. I have marketed up to this date about sixteen hundred baskets of good fruit, which I should judge to be not much more than two-thirds of the entire crop, as the late varieties have not yet matured.

The cultivation described above may not only show to a considerable extent what food peach trees need, but may also suggest how the land can at the same time be otherwise utilized with safety to the trees.

Respectfully yours,

MARSHALL MILES.

Concord, Mass., Sept. 26, 1881.

THE YELLOWS.

The Committee also take the liberty to append to their Report the following extract from the Annual Report of the Michigan Pomological Society, for 1878 (page 262), which they deem a good summary of what is known concerning the yellows and the best course to pursue in regard to it, and which may prove useful to those interested in growing peaches. We may not be able to make such laws as are proposed in the last paragraph of the extract, but if all growers can be made to realize the importance of following these suggestions, the terrible disease may at least be checked, if not eradicated. The Committee also recommend to peach growers "The Culture and Diseases of the Peach," by John Rutter; a book which contains many valuable hints and cannot fail to be a helpful guide.

More about the Yellows.

The following communication was presented by Mr. N. H. Bitely, as a compilation of facts elicited by the yellows discussion:

1. That the disease is contagious, and in some manner is communicated from tree to tree, from orchard to orchard, and from one neighborhood to another.

2. That it did not originate in Michigan, but was probably imported from its original home, the peach region of New Jersey, Delaware, and Maryland.

3. That neither soil nor cultivation is a factor in its spread.

4. That both budded and seedling trees, and all varieties of either are subject to its attack; although there are some facts to show that the white fleshed peaches are more exempt.

5. That it may be communicated from tree to tree by pruning knife, shears, or saw. Hence the implement used in pruning a tree should be thoroughly cleaned before making a cut upon another tree.

6. That no remedy is now known except to destroy the diseased trees promptly, and to neglect such destruction is sure death to an orchard, and all other orchards in the vicinity.

7. That the prompt eradication and burning of the diseased

trees may stop it entirely in an orchard, and at least will greatly retard its progress.

8. From the foregoing the conclusion seems inevitable that nothing but a stringent law, for the destruction of the diseased trees, applicable to the whole State, diligently and energetically enforced, will prevent the loss of every peach tree in the State. Without such a law we may bid a long farewell to this most luscious fruit which has so long been both a source of pride and revenue to the State. With such a law, so enforced, the future of the peach will be more hopeful.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS,

FOR THE YEAR 1881.

The Committee of Arrangements would respectfully submit their Report for 1881.

The exhibitions throughout the year have been highly gratifying to the members of the Society and to the public generally, and the Society has every reason to know that the interest in the cultivation of Fruits, Flowers, and Vegetables is constantly increasing.

Meetings of the Committee of Arrangements have been held at stated times during the year, and whenever it was necessary to consult as to the best means and methods for arranging and managing the various exhibitions. The Azalea and Rose, the Rose and Strawberry, the Annual, the Chrysanthemum, and the weekly exhibitions have, if possible, surpassed those of other years, and have given much pleasure to the many visitors.

At the Annual Exhibition, in September, the Plants and Flowers were shown in the Music Hall, and were so beautifully and artistically arranged as to elicit the admiration of every one, and more especially the members of the American Pomological Society, who were the guests of the Massachusetts Horticultural Society.

Records of each meeting of the Committee of Arrangements have been kept by the Secretary of the Society, and might be given here if necessary, but as they relate only to business details concerning the exhibitions of the Society, they would fail to be of general interest.

Adopted by the Committee.

CHARLES H. B. BRECK, *Chairman.*

MEETING

OF THE

AMERICAN POMOLOGICAL SOCIETY.

The Eighteenth Biennial Session and Exhibition of the American Pomological Society was held in Boston on the 14th, 15th, and 16th of September, 1881, at the invitation of the Massachusetts Horticultural Society. The two spacious halls in the Horticultural Society's building were devoted to the fruits contributed to the Pomological Society's exhibition, and to the fruits and vegetables exhibited by the Horticultural Society, the exhibition of plants and flowers being held in the Music Hall. The central and two western tables in the Upper Horticultural Hall were set apart for the fruits of the Pomological Society, which were gathered from every part of the United States and the Dominion of Canada, from New Brunswick to California, and from Montreal to Georgia. The most noticeable collection was from Michigan. It included a large variety of apples, pears, plums, and peaches, *Monstera deliciosa; Asimina triloba* (papaw) and other western fruits and nuts; also an instructive collection of the useful and injurious insects of the State. S. C. Harlow, of Bangor, Maine, exhibited 14 varieties of pears, and 68 of apples. James H. Ricketts, of Newburgh, New York, showed 18 varieties of his new seedling grapes, and Ellwanger & Barry, of Rochester, N. Y., a collection of new pears and grapes. The Montreal Horticultural Society exhibited an interesting collection of 34 varieties of apples; B. S. Fox, of San José, California, 90 varieties of seedling pears; Dr. J. W. Strentzel, of Martinez, Cal., a collection of grapes, oranges, and a variety of other fruits; several contributors at Los Angeles, Cal., showed oranges, lemons, Japanese persimmons, pomegranates, etc. P. J. Berckmans, of Augusta, Georgia, also showed several varieties of the new Japanese persimmons. James F. C. Hyde exhibited fruit of the *Actinidia polygama*, a climbing

shrub from Japan, which fruited for the first time in this country the present year. Hon. Marshall P. Wilder exhibited 164 varieties of pears; Hovey & Co., 190 varieties; Warren Fenno, 53 varieties; Benjamin G. Smith, 50 varieties; and there were many exhibitors of smaller collections. The whole exhibition comprised 535 dishes of pears, 188 of apples, 17 of peaches, 17 of plums, 100 of grapes, and 71 of miscellaneous fruits, making a grand total of 928 dishes. The attention of members and delegates at the previous meetings of the Society had been so much engrossed by the great quantities of fruit exhibited, that the sense of the meeting at Rochester, in 1879, was that the exhibition of large collections of fruit was not desirable, but that the show of fruits should be confined mainly to new or rare varieties, or such as for any reason possessed special interest, and hence the quantity exhibited was less than in previous years.

The meetings of the Pomological Society, for the discussion of fruits, were held at the Hawthorne Rooms, on Park Street, beginning at ten o'clock in the morning of Wednesday the 14th of September, when the delegates and members were welcomed in behalf of the Massachusetts Horticultural Society, by the President, Hon. Francis B. Hayes, who spoke as follows:

Mr. President and Gentlemen of the American Pomological Society:—In behalf of the Massachusetts Horticultural Society I cordially welcome you all who have honored our society and city by your presence on this occasion. From the Dominion of Canada to the everglades of Florida, from the Atlantic to the Pacific shore, all receive our warmest greetings. We feel as if you were children of our own, connected so intimately as your society has been with ours, the elder one, from your birth. If not our offspring, you are our very near and dear relations, and as such we welcome you to our home. It is with pride we receive as our guests so distinguished and useful a society as yours, and we are highly gratified to have the privilege of tendering all the facilities at our command to make your sojourn with us both profitable and pleasant to you.

You will see in this city and State a community diligently engaged in the peaceful arts of life; some are well known to you as being deeply interested in agricultural and horticultural pursuits. Here is the home of those who have been largely occupied in fostering manufacturing industries, illustrated by the two extensive exhibitions of mechanical art now presented in this city, and in

opening new avenues of commerce for the interchange of commodities between the different sections of our country, thereby uniting in the bands of mutual interest and sympathy all parts of this continent. If you are interested in the cause of education, our public schools, and schools and galleries of art, as well as our higher seminaries of learning, will be open for your inspection. Should you desire to see what we have done in horticulture, you have admission to the gardens of Hunnewell, Wilder, Payson, Sargent, Gray, Gardner, Ames, Hovey, and others. Should you be pleased to see places associated with the struggles of our fathers in asserting and maintaining their cherished principles of religious, civil, and political freedom, you will visit Plymouth Rock, Lexington, and Concord, and, within the limits of this municipality, Bunker Hill and Dorchester Heights, as well as Faneuil Hall, and the Old South Church, from which the tocsin of liberty was sounded, rousing men throughout the land to unite with heart and hand in securing their sacred, inalienable rights.

It is a most pleasant thought, Mr. President, that this nation is at peace with itself and all the world. We have "beaten our swords into ploughshares and spears into pruning hooks," and the entire Anglo-Saxon race is now harmoniously working out together the grand problems for the extension and perpetuity of freedom and the advancement of humanity.

In these noble objects, sir, your society has a deep interest. About one-third of a century has elapsed since your organization, and you may look with great satisfaction upon what you have accomplished. By your instrumentality, chiefly, the cultivation of choice fruits has been extended throughout the larger portion of this continent. You have been far in advance of all others in promoting the production of the largest and best varieties of fruits, and in naming them, so that the world can make its selection through the information your association has obtained and disseminated with great labor and liberality. Thus you have largely contributed to the comfort and happiness of mankind, besides augmenting in a wonderful manner the wealth of this country. And, better than all this, your association has exerted a powerful influence for the common good in bringing together men of large intelligence and ability from the different sections of this country and the great Northern Dominion, and thereby cultivating sentiments of respect and friendship for each other, and estab-

lishing a common brotherhood of laborers, having for the object of their work, in the development of the resources of nature, the welfare of mankind.

You must pardon me, gentlemen, for expressing the gratification I and my associates have, that in this great work of moral and material improvement our venerable fellow-citizen, who for several years filled the chair which I now occupy, is your leader. For more than thirty years you have with unanimity selected him to preside over your body, and you fully appreciate and gratefully acknowledge how much has been accomplished by your society through his zeal, indefatigable industry, and wise counsels. Long may his life of usefulness be preserved to us all!

You, sir, and your associates have the best wishes of the Massachusetts Horticultural Society that your convention may be harmonious, agreeable, and promotive of the important objects of your organization; and we shall hope you may have no cause for regret that you have honored us by your presence.

At the conclusion of Mr. Hayes's remarks, President Wilder spoke in the language following:

Mr. President:—In behalf of the American Pomological Society I beg to return you our sincere thanks for your kind words of welcome, and for the elegant and commodious preparations you have made for our reception.

We are right glad to be here once more, and to accept of the hospitalities which you have so generously extended to us,—here in the old Commonwealth of Massachusetts, the land of the Puritan and Pilgrim fathers—here in old Boston, from which emanated some of the first fruits of American pomology; here where William Blackstone, the first white settler on our peninsula, planted an orchard on yonder Capitoline Hill, two hundred and fifty years ago; here where John Winthrop soon after planted a vineyard and orchard on his island farm in our harbor; here where John Hancock had his nursery a hundred years ago; here at the home of the Massachusetts Horticultural Society, the second permanent institution of the kind on this continent; and may I not add, here at the home of your ancient president, where for more than half a century he has labored for the advancement of the science of the soil.

But, Mr. President, as I shall address the society more formally this afternoon, I will refrain from further remarks except to say

that we hope to be honored with your presence and that of the members of your society during our discussions.

Mr. Hayes then arose and extended an invitation of the society to the banquet on Friday even ng, in the following words:

Mr. President:—I respectfully invite you and all other members of the American Pomological Society, with your ladies, to a banquet which the Massachusetts Horticultural Society will give on Friday evening next in honor of your association.

The biennial address of the President was delivered in the afternoon, and the remaining two days of the session were devoted to receiving the reports of committees, the reading of essays and other papers on pomological subjects, and the discussion of the characteristics and value of the different fruits.

The Banquet.

The banquet at Music Hall, on the evening of Friday, the 17th, was a fitting conclusion to a week devoted to the study of nature, and the exposition of her rich offerings of fruit and flowers. The scene in the great hall was most beautiful and inspiring. The rare exotics which had been exhibited there through the week, decorated the platform, the balconies, and the sides of the hall, imparting to it an air of refinement and elegance; and tasteful bouquets were arranged on the tables, or suspended from the balconies. The plants and flowers, and still more, the bright, happy faces of the hundreds of ladies and gentlemen present, made up a picture at once charming and exhilarating, while the musical strains that ever and anon came floating from the rear balcony, where the Germania orchestra was stationed, filled the air with a concord of sweet sounds that were in happy harmony with the time and the occasion. Shortly after six o'clock, hearty applause announced the appearance of the President of the Horticultural Society, Hon. Francis B. Hayes, with his Excellency, Governor Long, on the right, and Hon. Marshall P. Wilder, President of the Pomological Society, on the left, the three taking seats at the front centre table. Others on the platform, were Ex-Governor Frederick Smyth, of New Hampshire, Hon. A. W. Beard, Collector of the port of Boston, Rev. Samuel K. Lothrop, D.D., Patrick Barry, First Vice-President of the Pomological Society, Samuel B. Parsons, of Flushing, N. Y., Dr. John A. Warder, President of the Ohio Horticultural Society, T. S. Gold, Secretary of the Con-

necticut Board of Agriculture, Hon. T. T. Lyon, President of the Michigan Horticultural Society, Professor William J. Beal, of the Michigan Agricultural College, Secretary of the Pomological Society, William Saunders, of the United States Department of Agriculture, Hon. J. E. Mitchell and A. W. Harrison, of Philadelphia, Charles M. Hovey and William C. Strong, Ex-Presidents of the Massachusetts Horticultural Society, Hon. Charles L. Flint, Ex-Secretary of the Massachusetts Board of Agriculture, Henry A. Breed, of Lynn, one of the founders of the Massachusetts Horticultural Society, Hon. Thomas C. Amory, Major Ben: Perley Poore, Rev. George E. Ellis, D.D., and Benjamin G. Smith, Treasurer of the Pomological Society.

Rev. Dr. S. K. Lothrop asked the blessing, and after an hour's attention to the substantialities of the banquet, the intellectual feast began with the welcoming address of Hon. Francis B. Hayes, President of the Massachusetts Horticultural Society.

Address of Hon. Francis B. Hayes.

Ladies and Gentlemen: — The Massachusetts Horticultural Society extends to you all its cordial greetings. Whether you have come from distant parts of this continent, or from the neighborhood; whether you fill high places of state, or hold other eminent positions, or occupy "the post of honor, the private station," all are most heartily welcomed to this board. We come here after work has been done, to refresh ourselves in each other's society, to rejoice together that we are the recipients of the rich gifts of bountiful nature, and to honor those who have done so much in developing its resources for our comfort and happiness. It is most pleasant to see so many of the fair sex gracing these tables. Man can always be sure that his objects are worthy and elevated when woman is interested in them and manifests her approval of them as she does now by her presence. The refining influence of devotion to the cultivation of fruits and flowers is universally admitted. Home is made delightful by their presence, and when they are absent, a lower state of intelligence and refinement is immediately noticed. High and ennobling aspirations belong to the lover and diligent student of nature, which accompany him as guardian angels in this life, attend him to its close, and fit him better for entrance into the land of purity and bliss.

We are highly gratified to welcome here the venerable president,

and so many of the members of the American Pomological Society, our distinguished guests, in honor of whom we are assembled. You have come to us, Mr. President and gentlemen, bringing your fruits with you; not merely the choice and rich display we have seen upon your tables, but the grand results of your associated intelligence, your labors, your long and varied experience, teaching us what are the best fruits, their true names, their quality and adaptability for growth in the various parts of the territory occupied by your Society, wherein almost all the fruits of the different zones can be raised. No narrow State or national lines limit your benign influences. Abroad, as well as at home, you are known as the first of the great national pomological societies of the world, and your investigations, studies, and practical experience enlighten, improve, and bless mankind.

Mr. President, it affords me and my associates, great pleasure to bear witness that though the snows of more than fourscore winters have fallen upon your head, yet you, the chief of America's pomologists, are constantly, diligently, and enthusiastically at work in promoting the praiseworthy objects of your society. Though for almost two generations of men, you have been known in this community as one of Boston's most prominent merchants—and are now, it is believed, the oldest one—and though you have held, with honor, high offices of dignity and trust, both of public and private character, yet, the love of nature possessing your soul, your peculiar mission seems to have been, by your example and teachings, and by the use of the gifts of Providence, to give dignity to the occupation of the tiller of the soil, and elevate to the highest consideration the science and art of horticulture and agriculture. Recognizing, ladies and gentlemen, the eminent services of the venerable president in the foundation, establishment, and progress of the association, of which he was the first president and its head for more than thirty years, and at the same time gratefully remembering all, whether present or absent, who have worked successfully in the same field with him during that period, allow me to propose this sentiment:

"The American Pomological Society: All honor to it for the invaluable benefits it has conferred upon mankind! May its benign influences be extended to and bless the remotest generations!"

RESPONSE OF HON. MARSHALL P. WILDER.

Hon. Marshall P. Wilder, the President of the American Pomological Society, responded as follows:

Mr. President:—It is a singular and pleasant coincidence that has brought us together, here at our own homes, in the exchange of official courtesies. You have the honor to preside over one of the oldest and most prosperous horticultural societies of our country, while I have the privilege of responding for one more extensive, which embraces in its organization not only the Union, but our entire continent. But the objects of our institutions are much alike—the promotion of an art which combines in its results the most perfect union of the useful and beautiful the world has ever known.

Most sincerely do I thank you, Mr. President, for your kind appreciation of my poor labors. You do me no more than justice when you call me a friend of rural art, for I cannot remember the time when I did not love the cultivation of the soil.

But, Mr. President, there is no merit in these. They are the instincts of my nature, and I have been prosecuting them under the conviction that I could do nothing better for mankind; and could my life be prolonged for another fourscore and three years, I would devote them all to the promotion of this most delightful and benevolent pursuit. In behalf of the American Pomological Society, I thank you for the hospitalities and courtesies that have been extended to us this week.

We are happy to be here again in the good old Commonwealth of Massachusetts, so renowned for the interesting memorial associations to which you most happily alluded in your eloquent welcome speech on the opening of our convention, the home of free schools, free churches, and may I not say, free speech; here, within the limits of this goodly city, where yonder monument rears its head in commemoration of those who fell in defence of American independence and human rights; the Old Cradle of Liberty, which still rocks to the songs of patriotism and freedom; the Old South, from whence sallied forth that noble band which converted Boston harbor into a monstrous teapot, the history and spirit of which have been wafted by its waters throughout the civilized globe; and here at the home of the Massachusetts Horticultural Society, over which you so gracefully preside. The Massachusetts Horticultural Society has been a great leader in pomological science. She has

been the mother of numerous other societies, among which you have properly counted our own, for it was by her authority that I was empowered to issue the circular which assembled the National Convention of Fruit Growers in New York that organized the American Pomological Society, and nobly has she sustained our institution to the present day.

With the close of these ceremonies the American Pomological Society will have completed thirty-three years of its existence. It was the first national society for the promotion of pomology of which we have any account in history. But it is more than national; it is American, and embraces the provinces of British America on the north. It has vice-presidents and fruit committees in more than fifty States, territories, and districts, through whom we receive reports of the fruits adapted to their various locations; and wherever the pioneer and emigrant take up their homes we seek to find out what fruits prosper there. It has held its sessions in the various great cities of our country, and now, for the fourth time, it comes to receive the hospitalities of the Massachusetts Horticultural Society.

Mr. President, we live in an age of remarkable activity and enterprise, and in nothing is this more to be seen than in the progress of fruit culture during the present century. Many of us can remember the time when the only strawberry in our markets was the wild strawberry of the fields. Now I have on my register the names of more than four hundred kinds which have been under cultivation in my own day; and so great has been the increase in quantity that Norfolk, Va., has sent to the Boston market the last summer over six thousand bushels in one day, and a little town in our own vicinity has sent ten thousand bushels the present year. Fifty years ago there were no hardy grapes in our market except a few Isabellas, Catawbas, and the wild varieties; now we have under cultivation more than two hundred kinds, and California alone can produce not only enough to supply the country, but she ships entire cargoes of wine to Europe to be manipulated and muddled over, and sent back to us for consumption. The same increase may be noticed in the production of the peach, millions upon millions of bushels being sent to our various markets; and so extensive has been the export of apples that Boston alone has sent to Europe and elsewhere the last year more than six hundred thousand barrels.

But I must bring these remarks to a close. Suffice it to say that when I reflect on what has been accomplished since the American Pomological Society was established, the vast territory which is yet to be occupied with the culture of fruits, their importance as an article of food, and as one of the great sources of national revenue, I pray that my life may be prolonged for a few years to see more of the great future of pomology on this continent, when all of its fruit lands shall have been opened up for cultivation; when the Northern Pacific Railroad shall have connected us with Oregon, Washington, Puget Sound, Sitka, and southern Alaska, with climates in many places milder than in New England; when the Southern Pacific road, penetrating the rich lands in Mexico, Arizona and the valleys of the Rio Grande and El Paso, already renowned for their wild fruits and grapes—when these, together with Texas, larger than all New England and the Middle States—and those of our vast interior and the immense resources of the Pacific slope, are all brought into cultivation—and all this is to come. Then will our country possess the most productive and remarkable fruit belt the world has ever known; as distinguished for the excellence and abundance of its productions as it now is for its free institutions, prosperity, and power.

Mr. President, I cannot take my seat without thanking you again for the honor you have conferred on our society, for the brilliant assembly with which you have surrounded us, for these magnificent plants, luscious fruits, and lovely flowers, and, better than all, for the presence of woman, which adds grace, beauty, and interest to the scene.

President Hayes then announced the second regular sentiment as follows:

"The Commonwealth of Massachusetts; distinguished for promoting the cultivation of the soil as well as the culture of the mind. Our fathers planted the tree of liberty, and their children gather the rich fruits in peace and prosperity."

Response of Governor Long.

The Governor said that inasmuch as it was without previous notice that he was called upon to speak, his friends who were gathered would be spared any but the briefest remarks. He could not fail to take advantage of the opportunity to thank

the society, which, during the past fifty years, has been one of the educators not only of this Commonwealth but of the whole country; nor could he fail to pay the sympathetic regard of all to the Nestor among the chiefs of horticulture, who represents the fathers that planted the tree and the children who gather the fruit, and who enjoys the distinction of being at once the oldest and the youngest man in Massachusetts. He desired also, in behalf of the Commonwealth, to welcome so many representatives of other States and Territories, who had come here for the common good, and who are engaged not only in the interests of pomology but in securing the common ties which make our States members of one domain. The culture of the soil goes hand in hand with the culture of the mind. Go out among the hills, visit the large rural populations, and you will find, as in the cities, fair after fair exhibiting marks of increasing progress. The exhibit which the society is making in a neighboring hall is only an indication of the work of culture that is going on in the whole community. The cultivation of the soil is no longer living on the bounty of the earth; it is finding out the secrets that lie within, and securing the rewards which she offers to devoted labor and skill. Nothing is more suggestive in these days than the increase in production, not only for the benefit of the rich, but for the poor, and with all this increase the individual's condition is improved, so that he enjoys a higher life and greater possession in all the arts of living. It is teaching the true theology, the true patriotism, the true loyalty, by which each man works for the common good by devoting himself to his special pursuit. He who invents a contrivance, or brings forth a new variety of fruit, is laying the foundation for the greater comfort of his fellow-men hereafter. The Governor concluded by expressing the pleasure which it gave him personally to greet the members of the Pomological Society.

After more music, President Hayes announced the next sentiment as follows:

"The President of the United States—The sympathy of the Massachusetts Horticultural Society and its guests, the American Pomological Society, assembled in Boston, is extended to our beloved President and his family in their affliction, with the hope and prayer that his valuable life may be preserved to bless the nation."

Remarks by Collector Beard.

Hon. A. W. Beard was called on as the representative of the National Government. He observed that eleven weeks ago the heart of the nation stood still on hearing the news that came from Washington. For eleven weeks we have listened to the click of the telegraph wire, to hear the news of life or death. The strain upon the sympathies of the nation has had no parallel since the war. We have seen a terrible thing, that this man, in the prime of his life and powers, should be stricken by an assassin. We have sought the only thought of relief—that the nation can survive whether the President live or die; but this has not stilled our anxiety. The President still waits patiently; let us emulate his patience. The calamity was a terrible one, and yet there has been a silver lining to the cloud; for the hearts of all throughout the land have been united in sympathy, and, whatever the result, the nation will be the better for it. With our hearts aroused as for a dear father or brother, let us rely on Him who doeth all things well.

Other Speeches.

The following sentiment was then proposed:

"The City of Boston—Prominent in history from its early struggles in the cause of freedom; her free schools, free churches, and benevolent institutions have borne abundant harvests of rich fruits in which the people rejoice."

In the absence of Mayor Prince, who sent a pleasant letter, Alderman C. H. B. Breck responded, as follows:

Mr. President, Ladies, and Gentlemen: In the unexpected absence of His Honor the Mayor, and representing the City Government, I take great pleasure in replying to the sentiment you propose, and greet with a warm and hearty welcome the members of the American Pomological Society, who represent every State of the Union and the Dominion of Canada.

The City of Boston is always ready to welcome every association devoted to the general good, but when gentlemen of your profession, whose object is the propagation and cultivation of good fruits, and the rejection of bad ones, come together here, it deems you worthy of its highest regards. Our citizens are deeply interested in the various kinds of fruits; not so much in their cultivation as in being able to obtain them cheaply, so that the poor as well as the rich may buy and eat. We find them pretty plenty gener-

ally, but I am sorry to say they are sold at such high prices that it takes a well filled purse to buy these life-preserving gifts of nature.

I regret that we have no orchard or vineyard to show you, but we have a public garden tastefully laid out, with beautiful walks, and bordered with rare plants and shrubs, with flowers of every hue; the perfect taste and order displayed in this place which may almost be called a second garden of Eden, are a source of pride to the heart of every Bostonian, and I trust you will find time to visit this lovely spot with its beautiful surroundings.

Hoping that your stay will continue to afford you the greatest pleasure while in the city, I again assure you of the best wishes of our citizens.

The next sentiment was as follows:

"The British Colonies in North America: Bound to this Republic by common interests, brought nearer and nearer by social intercourse, and fastened by the golden links of commerce. May their friendly relations with the United States never be interrupted."

Rev. Robert Burnet, D.D., of Nova Scotia, was expected to respond, but he had returned home.

The following sentiment was next offered:

"The Pomology of the South—From her generous and genial clime we of the North receive the delicious products of her soil while 'winter lingers in the lap of spring.' The enterprise and skill of her cultivators deserve our warmest acknowledgments for greatly prolonging to us the seasons of fruits."

Judge Whitehead, of Norfolk, Va., not appearing to respond to this sentiment, as had been arranged, three cheers where given for Old Virginia.

The next toast was

"The Pomology of the West—The granaries, orchards, and vineyards of the territorial domain of the United States, vast in extent, abundant in resources, are treasure houses upon which the world may draw for their supplies."

Colonel N. J. Colman, of Missouri, responded. He felt he should be doing injustice to the West if he did not say that every man and woman in the West felt gratitude to Boston for this welcome. It is true that the West has not had a Wilder, a Barry, a Walker, a Manning, and such eminent pomologists, but it can boast of a Warder, a Longworth, a Kirtland, a Flagg. The

speaker alluded to the practical work which is now done in the West, making the study of pomology a part of the education of the young. The West loves the Hon. Marshall P. Wilder as a dutiful son loves his parent. The Mississippi Valley Horticultural Society, which is to meet at Chicago, will show what the great West is capable of doing.

Hon. Isidor Bush, of Missouri, presented a greeting from the Nestor of fruit-growers in the West, Hon. Fred Müench, who sent a bunch of grapes to President Wilder.

The next sentiment read was

"The Pomology of the North: Despite her cold and uncongenial climate, her rough and rocky soil, she produces fruits which rival in excellence those of the most favored climes."

Charles M. Hovey, Ex-Vice President for Massachusetts, responded in a pleasant manner, and said, in speaking for the North, that we feel delighted to give greeting to our friends from all sections interested in this great subject of pomology. We have gained so much through this society that we are not obliged individually to test all the fruits, but can learn by the experience and teaching of this organization. He alluded to the fruits which the North has contributed to the country as durable and valuable accessions to the resources of the people.

The next sentiment read as follows:

"The Pomology of the East: The pioneer in the progress of American civilization, scattering its fruits like manna from the skies all over our land."

Response by Samuel B. Parsons, of New York.

The next sentiment was

"The United States Agricultural Society: The uniform friend of American Agriculture; the annals of her history attest the value of her former labors. May she never lack the sunshine of patronage; may she reap an abundant harvest of renown."

Responded to by Ex-Governor Frederick Smyth, of New Hampshire, who referred in an affectionate manner to his various relations, public and private, with Col. Wilder, and to the interest which he felt in the cause of American Pomology.

Major Ben: Perley Poore, Secretary of the United States Agricultural Society, was then called for and responded in his usual pleasant vein.

Then came this sentiment:

"The New York Horticultural Society: Her fruit resources are ample. May the development of them be compared with the motto of her State, 'Excelsior.' Glad are we that she is so well carrying out the designs of her founders."

Response by Rev. E. P. Roe.

He said that the influence of the Horticultural Society in Boston had done much to tone up the Pomological Society. Men are giving to pomology what is more to be valued than their wealth, namely, their influence, their brain, and personal effort. The speaker paid New England the honor of having not only improved the science of the soil but of having brought forth in abundance the best of all products, true and honorable men. He also alluded to the valuable services rendered to Pomology by his friend, Charles Downing.

The following sentiment was proposed:

"The Pennsylvania Horticultural Society: The first permanent horticultural society established on our continent. Worthily has she executed her mission as a pioneer. Massachusetts was bound to follow in the footsteps of so illustrious a leader."

The pertinent response of W. L. Schaffer, President of the Pennsylvania Horticultural Society, was read by A. W. Harrison, Secretary, Mr. Schaffer having been obliged to leave.

Then followed this sentiment:

"The New England Agricultural Society: Her vigorous and intelligent labors have contributed largely to the prosperity of the country. Gratified that its President has been placed at the head of the Agricultural Bureau of the nation, we are confident that the usefulness of the Society will continually increase while its able President and Secretary conduct its affairs."

Hon. George B. Loring, United States Commissioner of Agriculture, and President of the Society, and Hon. Daniel Needham, Secretary, being absent, no response was made.

The company then rose and sang, to the tune of "Auld Lang Syne," the following

HYMN,

WRITTEN FOR THE OCCASION BY JOHN G. WHITTIER.

O Painter of the fruits and flowers,
We own Thy wise design,
Whereby these human hands of ours
May share the work of Thine!

Apart from Thee we plant in vain
The root and sow the seed;
Thy early and Thy later rain,
Thy sun and dew we need.

Our toil is sweet with thankfulness,
Our burden is our boon;
The curse of Earth's gray morning is
The blessing of its noon.

Why search the wide world everywhere
For Eden's unknown ground?—
That garden of the primal pair
May never more be found.

But, blest by Thee, our patient toil
May right the ancient wrong,
And give to every clime and soil
The beauty lost so long.

Our homestead flowers and fruited trees,
May Eden's orchard shame;
We taste the tempting sweets of these
Like Eve, without her blame.

And North and South and East and West,
The pride of every zone,
The fairest, rarest, and the best
May all be made our own.

Its earliest shrines the young world sought
In hill-groves and in bowers;
The fittest offerings thither brought
Were Thy own fruits and flowers.

And still with reverent hands we cull
Thy gifts each year renewed;
The good is always beautiful—
The beautiful is good.

Then came the last sentiment of the evening:

"Michigan: In the magnificent exhibition which she has made to us, we witness a bountiful harvest of good fruits raised on good soil. We rejoice in the growth and prosperity of the State."

Response of the Hon. W. K. Gibson:

"*Mr. President:* I appreciate the honor of being called on to respond to a sentiment so complimentary to the State to which I belong.

The display which you have deemed worthy of special notice, is inferior in appearance and quality to that we are usually able to make in more favorable seasons.

Mr. President, we do not feel as though we were strangers here. Among its early pioneers Michigan numbered many from New England, and there has entered into our growth as a State much of the sturdiness and integrity of character and somewhat of the culture characteristic of New England life.

The motto of our State is *Si quæris peninsulam amœnam circumspice*, and, sir, if you seek for a beautiful peninsula, look upon her as she lies almost surrounded by the waters of the northern lakes. Every variety of soil, every diversity of climate are hers. In the southern portion are patches of prairie, with hills and valleys, and rivers and lakes, while at the north the waters of Lake Superior break against a coast as rocky and wild as that of New England. Of the fertility of her soil, and its adaptation to the raising of all kinds of fruit, you have evidence before you today. Within her borders also are vast forests of pine and hard woods, scarcely equalled in variety by any State in the Union.

From these forests, sir, within the past few days has gone up, as from a fiery furnace, a cry of suffering from destitute, homeless thousands, which has touched the heart of the East as well as the West, and which has met with a generous response in this city.

Mr. President, it seems to me that the heart of the whole nation has grown very tender within the past few months. That bed of pain and suffering, upon which the President has lain for so many weary days, watched over by a loving and heroic wife, has done more to awaken generous sympathy, and bind together the different sections of the country, than all the reconstruction acts ever passed by Congress. There can be no enmity in our hearts towards those whose fervent prayers have mingled with our own for the President's recovery. And to Boston, sir, whose heart is ever tender and responsive to suffering, let me express the thanks and gratitude of our whole State for the generous donations you are sending to relieve those made destitute by the recent forest fires.

Mr. President of the Massachusetts State Horticultural Society, allow me to say that this banquet is something more than a mere feast of good things. In this you have crowned and dignified what has preceded it. It comes naturally as a part of what we

call the eternal fitness of things. For three days, sir, you have shown us the noblest fruits and fairest flowers of your soil, and to night, here in this room, we have had the pleasure of meeting the noblest fruits and fairest flowers of your intellectual culture.

One speaker has said this evening, quoting from Emerson, that much of truth goes floating about the world in popular proverbs. Doubtless this is true, and there is an old saying that every New Englander when he dies expects to go to—Boston. Now if this be true, and it probably is, let me express the wish that such soul may go by the way of Michigan, and, thus escaping purgatory, reach here through paradise.

President Hayes, in making the closing remarks, expressed the gratification felt by the Massachusetts Horticultural Society in having for its guests this evening so many distinguished in the science and art of horticulture, and wishing all a safe and pleasant return to their homes, he asked them to unite in singing America, which was done with enthusiasm, and then the meeting was dissolved.

REPORT

OF THE

COMMITTEE ON PUBLICATION AND DISCUSSION,

FOR THE YEAR 1881.

The discussions of the past winter and spring, published in Part I of the Transactions for 1881, make unnecessary any extended report. The labor of your Committee has been greatly lessened by the accurate and admirable digest of the discussions by the Secretary, and the Society is largely indebted to him for the supervision of all our printed reports.

Horticulture in its present development is not one of the exact sciences; hence the importance and usefulness of discussion. With a horticultural temple, the finest in the world, and a library well known as containing the best collection of horticultural books in America, and, undoubtedly, with as large a membership of educated and skilled cultivators as exists in the country, our opportunities are great, and the results of our discussions and investigations are expected to be of corresponding value. Much as they have done for us already, they are capable of doing far more.

Ex-President Parkman, in his valedictory address, well said, "With us, as with all horticultural or agricultural clubs or societies, discussion is subject to the same evil. It is apt to go round with the same persons in the same groove, keeping all the time at about the same level of intelligence and knowledge, and so fail to gain its real object, which is to develop those habits of investigation and reflection, without which the horticulturist can never be master of his craft. If members would more generally share in them, preparing themselves beforehand to do so by recalling what their own experience may have taught them about the subject announced, and then, by means of books and journals, comparing

their own results with those recorded by others, our discussions would become a powerful means of stimulating observation and thought." The Committee have endeavored to avoid the danger here pointed out, but, in order that the discussions should reach the standard in the minds of the Committee, and attain their highest usefulness, the coöperation of the members of the Society will be necessary, and the Committee trust that each will be prepared to do his best in adding to the interest of the meetings.

The report of the Treasurer for 1880 acknowledged the receipt of $500, for sales of the History of the Society; since then copies have been sold to the amount of nearly three hundred dollars. Your Committee would again call the attention of members who have not already obtained a copy, to the importance of doing so without delay, as the number on hand is limited.

A prize of twenty-five dollars has been awarded to Mrs. T. L. Nelson, of Worcester, for an essay upon "Our Native Plants adapted for Winter Culture for their Flowers." Several other essays competing for prizes were received, which, after careful consideration your Committee felt obliged to reject.

Respectfully submitted by

BENJAMIN G. SMITH,
JOHN B. MOORE,
E. LEWIS STURTEVANT,
Committee on Publication and Discussion.

REPORT

OF THE

LIBRARY COMMITTEE,

FOR THE YEAR 1881.

The Committee on the Library submit the following report:

The Society's appropriation and the income derived from the Stickney Fund have been expended in the same manner as in former years. The list of periodicals taken has been nearly the same as heretofore; the most important changes in the coming year will be that the Farmer's Magazine, a work very valuable for many reasons, will be omitted, being no longer published, and that the American Naturalist, which was dropped some time ago for lack of funds, and has been asked for by several members, will be again taken.

Among the books added to the Library from the Stickney Fund —which, in number and value, will compare not unfavorably with the additions made in previous years.—the following are worthy of special notice: the splendid Monograph of the Genus Lilium, by Mr. Elwes, the last three parts of which have recently been received; the Arboretum Segrezianium; Verschaffelt's Iconography of the Camellia; Watson's Dendrologia Britannica; Kotschy's Monograph of the European and Oriental Oaks; Boissier's fine illustrations of the Flora of Spain; Hoola Van Nooten's Flowers, Fruits, and Foliage of Java; Hallier's Deutschlands Flora; Dodel-Port's Anatomical and Physiological Atlas of Botany; Zippel and Bollmann's Auslandische Culturpflanzen; Cesati, Passerini, and Gibelli's Flora Italiana; Schlectendal, Langethal, and Schenk's Flora von Deutschland; Emmons's Agriculture of New York, and the Orchid Album, the last a magnificent work appearing at stated intervals, conducted by Robert Warner and B. S. Williams, and designed to give colored plates of new orchids

and new varieties of old ones, with cultural notes. From a purely horticultural point of view, this publication seems likely to be second in value to none.

In the first part of the year a fresh attempt was made to supply our table with nurserymen's and seedmen's catalogues. A circular prepared by the Secretary of this Committee was sent to all the leading dealers asking that their lists might be sent to this library from time to time, and setting forth the advantage to themselves likely to result from their compliance. The response to this circular has been very satisfactory; we have received the catalogues of one hundred and sixty-one dealers from all parts of the United States, and from England, Ireland, Scotland, France, Italy, Germany, Holland, Belgium, and Switzerland. Many of these catalogues are very elaborate, and valuable both horticulturally and botanically. It is the intention of the Committee that these shall be taken out as other books are, and that they shall be charged on the Librarian's book. Two of the most valuable, H. Cannell & Sons' and D. M. Ferry & Co.'s, are missing, having been taken by some person who omitted to have them charged; it is requested that those who have them report the fact to the Librarian.

We must again call the attention of the Society to the need of a card catalogue of our colored plates. We have no index to these, except the work of Pritzel; if this Society were dead, or if it had made no growth since the date of that publication, nothing more would be needed; but this is a body alive in all its parts; its library is expending a large sum annually, and must spend or forfeit it. How many plates we have received of which we have no index, we cannot say, but believe that they might be numbered by thousands. The present time is without parallel in horticultural advance and botanical research; exploring parties sent out by governments and societies are bringing back new vegetable treasures month by month; the great horticultural establishments of Europe have their own private travellers in all parts of the world, and new varieties are constantly coming into existence by the art of the hybridizer. The prospect, therefore, is that for a long time to come there will be subjects in abundance for the draughtman's skill. Most of these plates will come to this library in course of time, but if no index to all these exists, their value is half lost to us. The cost of such a card catalogue need not be very great; there would be no need of botanical verification of every plate; a simple list of

them with the names under which they were issued and the place where they are to be found is all that is needed. Even if one series of books only were taken to begin with, it would be something.

Every frequenter of this library room must appreciate the vast improvement which has been brought about. The rooms are as elegant as could be desired, and the alterations which allow the superintendent's business and ticket-seller's operations to be carried on without encroaching upon this apartment, ought to afford great gratification to the Society as they do to this Committee. We need no longer dread the possible depredations of the army of hangers-on who accompany the lessees of the halls, and those who desire to put these rooms to their legitimate use can now do so without interruption.

For the Committee,

W. E. Endicott, *Chairman.*

LIBRARY ACCESSIONS.

Books Purchased.

Verschaffelt, Alexandre. Nouvelle Iconographie des Camellias, contenant les Figures et la Description des plus rares, des plus nouvelles, et des plus belles varieties de ce Genre. 12 vols. bound in 7. 8vo. Gand: 1848–1860.

Clarke, C. B., late acting Superintendent of the Calcutta Botanic Garden. Commelynaceæ et Cyrtandraceæ Bengalenses. (Paucis aliis ex terris adjacentibus additis.) Folio. 93 pl. Calcutta, Bombay, and London: 1874.

Elwes, Henry John, F. L. S., F. R. S. A Monograph of the Genus Lilium. Nos. 5, 6, and 7, completing the work. Folio. 17 colored plates. London: 1880.

Warner, Robert, and B. S. Williams. The Orchid Album, comprising Colored Figures and Descriptions of New, Rare, and Beautiful Orchidaceous Plants. Vol. 1, Parts 1–4. 4to. 16 colored plates. London: 1881.

Lindley, Professor, F. R. S. A List of the Orchidaceous Plants collected in the East of Cuba, by Mr. C. Wright, with characters of the new species. 8vo. pamphlet. 1858.

——— ———. Contributions to the Orchidology of India. No. 2. 8vo. pamphlet. 1858.

Gérard, R. La Fleur et le Diagramme des Orchidées. 4to. pamphlet. Paris: 1879.

Parnell, Richard, M. D., F. R. S E. The Grasses of Scotland, illustrated by figures drawn and engraved by the Author. 8vo. 66 plates. Edinburgh, and London: 1842.

Baker, J. G., on the English Mints, and Berthold Seemann, Ph.D., on Faradaya, a new Australian Genus, and on Plants producing Double Flowers. 8vo. pamphlet. [From the Journal of Botany.]

Flora Danica. Fasciculus 50. Folio. Plates 2941–3000. Copenhagen: 1880.

Hallier, Dr. Ernst. Deutschlands Flora. 9th edition. 4 vols. Royal 8vo. 500 colored plates. Dresden: 1881.

Schlechtendal, Dr. D. F. L. von, Dr. L. E. Langethal, und Dr. Ernst Schenk. Flora von Deutschland. Fünfte auflage, von Dr. Ernst Hallier. Lieferungen 1–47. Small 8vo. Many colored plates. Gera-Untermhaus: 1880, 1881.

Bertram, W. Flora von Braunschweig, etc. Small 8vo. Braunschweig: 1881.

Graf, F. Die Alpenpflanzen. Hefte 22–34. 16mo. 117 colored plates. Prague: 1881.

Cesati, V., G. Passerini, and E. G. Gibelli. Compendio della Flora Italiana. Fasciculi 1–27. Royal 8vo. 81 plates. Milan, Palermo, and Rome: 1878–1881.

Lojacano, M. Contributi alla Flora di Sicilia. 8vo. pamphlet. Palermo: 1878.

Barrelier, Jacobo. Plantæ per Galliam, Hispaniam, et Italiam, etc. Folio. 334 plates. Paris: 1714.

Boissier, Edmond. Voyage Botanique dans le Midi de l'Espagne, pendant l'annee, 1837. 2 vols. 4to. 206 colored plates. Paris: 1839–1845.

Willkomm, Mauritio, et Joanni Lange. Prodromus Floræ Hispanicæ, etc. 3 vols. 8vo. Stuttgart: 1861–1880.

Marès, le Dr. Paul, et Guillaume Vigineix. Catalogue Raisonné des Plantes Vasculaires des Iles Baléares. 8vo. 10 pl. Paris: 1880.

Barcelo y Combio, D. Francisco. Flora de las Islas Baleares, etc. 8vo. Palma: 1879–1881.

Lemoine, Victor. Atlas des Caractères Specifiques des Plantes de la Flore Parisienne et de la Flore Rémoise. Livraison 3, in continuation. 8vo. 10 plates. Paris and Reims, 1881.

Sauzé, J. – C., et P. N. Maillard. Flore du Département des Deux-Sèvres. 3 vols. 12mo. Niort: 1872–1880.

Liégard, A. Flore de Bretagne. Small 8vo. Paris: 1879.

Ardoino, Honoré. Flore Analytique du Département des Alpes-Maritimes. 2d edition. 12mo. Menton and Nice: 1879.

Johnson, Thomas. Descriptio Itineris Plantarum Investigationis ergo Suscepti, in Agrum Cantiarum Anno Dom. 1632, etc., Nup. edit. T. S. Ralph. Small 4to. London: 1849.

Pierre, L., Directeur du Jardin Botanique de Saïgon. Flore Forestière de la Cochinchine. Publié sous les auspices du Ministère de la Marine et des Colonies. Fasciculi 1–3. Large folio. 48 plates. Paris. [Still publishing.]

Kurz, S., Curator of the Herbarium, Royal Botanic Gardens, Calcutta. Forest Flora of British Burma. Published by order of the Government of India. 2 vols. 8vo. Calcutta: 1877.

Burmann, Nicolaus Laurens. Flora Indica cui accedit series Zoophytorum Indicorum nec non Prodromus Floræ Capensis. Small 4to. 67 plates. Leyden: 1768.

Hoola Van Nooten, Madame Berthe. Fleurs, Fruits, et Feuillages choisis de l' Ile de Java. 3d edition. Folio. 40 colored plates. Brussels: 1880.

Gregg, W. H. A Text Book of Indian Botany, Morphological, Physiolcgical, and Systematic. Parts 1 and 2. 12mo. 165 wood-cuts. Calcutta: 1881.

Regel, E. Flora of Toorkestan. Vol. 3, Part I, Primulaceæ and Liliaceæ. 4to. 22 plates, part colored. 1876.

Aitchison, J. E. T., F. L. S., on the Flora of the Kuram Valley, Afghanistan, and C. B. Clarke, on Indian Begonias. 3 plates. [From the Journal of the Linnean Society.] 8vo. 1879, 1880.

Czerniavsky, W. Periodical Appearances in the Life of Plants in Late Autumn, Winter, and Spring, in Sookhoom, Transcaucasia. [Russian.] 8vo. pamphlet. Tiflis: 1879.

Zeller, Mrs. Hannah. Wild Flowers of the Holy Land. Small 4to. 54 colored plates. London: 1889.

Mathews, William, M.A. The Flora of Algeria, considered in relation to the Physical History of the Mediterranean Region and Supposed Submergence of the Sahara. 8vo. Map. London: 1880.

Willis, Oliver R., Ph.D. Catalogue of Plants growing without cultivation in the State of New Jersey, with specific descriptions of all the Violets found there, directions for collectors, teachers, and students, and a Directory of Botanists. Revised and enlarged edition. 8vo. New York, Chicago, and New Orleans: no date.

Hemsley, W. B. Biologia Centrali-Americana; Botany. Parts 1–9. 4to. 50 plates. London: 1879–1881.

Hughes, The Reverend Mr. Griffith, A.M. The Natural History of Barbados. Folio. 29 plates. London: 1750.

Polakowsky, H. Die Pflanzenwelt von Costa Rica, etc. 8vo. Dresden: 1879. [XVI. Jahresbericht des Vereins für Erdkunde, zu Dresden, pp. 25–124.]

Rodrigues, J. Barbosa. Enumeratio Palmarum Novarum quas Valle Fluminis Amazonum. 8vo. pamphlet. Sebastianopolis: 1875.

Wallace, Alfred Russel. Palm Trees of the Amazon and their uses. 12 mo. 48 plates. London: 1853.

Link, H. F., Fr. Klotsch, and F. Otto. Icones Plantarum Rariorum Horti Regii Berolinensis. 4to. 2 vols. in 1. 48 colored plates. Berlin: 1841–1844.

Pfitzer, Dr. Ernst. Der Botanische Garten der Universität Heidelberg. Ein Führer für dessen Besucher. 8vo. Heidelberg: 1880.

Todaro, Augustino. Hortus Botanicus Panormitanus, etc. Vol. 1. Folio. 24 colored plates. Palermo: 1876–1878.

Lavallée, Alphonse. Icones Selectæ Arborum et Fruticum in Hortis Segrezianis collectorum. Livraisons 2 and 3 in continuation. Folio. 12 plates. Paris, London, and Madrid: 1881.

Dodel-Port, Dr. Arnold and Caroline. Anatomical and Physiological Atlas of Botany. Parts 1–3. 18 large folio plates, with 12mo. Handbook to each part. Translated and edited by D. McAlpine, F. C. S. Esslingen, Edinburgh, and London: 1880.

Messer, Frederick A. A New and Easy Method of Studying British Wild Flowers by Natural Analysis, etc. 8vo. London: 1880.

Bailey, W. Whitman, B. P. The Botanical Collector's Handbook. Small 8vo. 30 wood-cuts. Salem: 1881. [Naturalist's Handy Series, No. 3.]

Wood, Alphonso, A. M., and J. Dorman Steele, Ph. D. Fourteen Weeks in Botany. Small 8vo. New York, Chicago, and New Orleans: no date.

——— ——. The American Botanist and Florist. 8vo., 524 wood-cuts. New York, Chicago, and Troy: no date.

Plant-Life. Popular Papers on the Phenomena of Botany. Small 8vo. 148 wood-cuts. London: 1881.

Henderson, Peter. Handbook of Plants. Large 8vo. New York: 1881.

Moore, Thomas, F. L. S., F. R. H. S., Curator of the Botanic Garden, Chelsea. Epitome of Gardening, with an introductory chapter on the Principles of Horticulture, by Maxwell T. Masters, M. D., F. R. S. Small 8vo. 207 wood-cuts. Edinburgh: 1881.

Moore, Thomas, F. B. S., and William P. Ayres, C. M. H. S. The Gardener's Magazine of Botany, Horticulture, Floriculture, and Natural Science. 3 vols., small 4to. Colored plates and wood-cuts. London: 1850, 1851.

Des Cars, A. A Treatise on Pruning Forest and Ornamental Trees. Translated from the seventh French edition, with an Introduction, by Charles S. Sargent, Professor of Horticulture in Harvard College. Small 8vo. Plate and 53 wood-cuts. Boston: 1881. [Publications of the Massachusetts Society for the Promotion of Agriculture.]

Wood, Samuel. The Forcing Garden; or, How to Grow Early Fruits, Flowers, Vegetables, etc. Small 8vo. 35 wood-cuts. London: 1881.

Quin, Charles W. Garden Receipts. Small 8vo. London: 1877.

Foster, Mrs. J. Francis. On the Art of Gardening: A Plea for English Gardens of the Future, with Practical Hints for Planting them. 12mo. pamphlet. London. 1881.

Hogg, Robert, L.L. D., F. L. S., Editor. The Herefordshire Pomona, containing colored figures and descriptions of the most esteemed kinds of Apples and Pears. Parts 2 and 3 in continuation. Folio. Colored plates and wood-cuts. London and Hereford: 1879, 1880.

Fish, D. T. The Hardy Fruit Book. Vol. 1, the Apple, Pear, Peach, and Nectarine. Small 8vo. Many wood-cuts. London: no date.

Lauche, W. Deutsche Pomologie. Leiferungen 25–46 in continuation. 8vo. Colored plates of fruits. Berlin: 1880. Erganzungsband; Handbuch des Obstbaues. Lieferungen 1–6. 8vo. Wood-cuts. Berlin: 1880–1881.

Dybdahl, J. A. Jordbær-og vore vigtigste Frugtbusker-arter, etc. 4 Hefte. 8vo. 2 colored plates. Copenhagen: 1879.

Clemente y Rubio, Don Simon de Rojas. Ensayo sobre las Variedades de la Vid Commun que vegetan en Andalucía. 28 colored plates. Memoria sobre el Cultivo de la Vid en Sanlucar de Barrameda y Xerez de la Frontera, per Don Esteban Boutelou. Idea de la Práctica Enológica de Sanlucar de Barrameda ó del Método que allí se sigue en la Fabrication de los Vinos y algunas observaciones sobre la Destilacion de los Aguardientes. Folio. Madrid: 1879.

The Vineyard, etc., being the Observations made by a Gentleman in his Travels. Small 8vo. London: 1727.

Hooper, E. J. The Western Fruit Book. 12mo. Cincinnati: 1857.

Baker, Charles R. Practical and Scientific Fruit Culture. Large 12mo. Wood-cuts. Boston: 1866.

Rutter, John. The Culture and Diseases of the Peach; a Complete Treatise for the use of Peach Growers and Gardeners of Pennsylvania and all districts affected by the "Yellows" and other diseases of the tree. Small 8vo. Harrisburg: 1880.

Nietner, Th. Die Rose, ihre Geschichte, Arten, Kultur, und Verwendung nebst einem Verzeichniss von fünftausend beschreibenen Gartenrosen. 4to. 12 colored plates, 106 wood-cuts, and 2 garden plans. Berlin: 1880.

Berg, Dor. D. Cárlos. La Reina de las Flores. Conferencia Popular dada en la Asamblea General de la Sociedad Científica Argentina, el 4 de Mayo de 1880. 8vo. pamphlet. Buenos Aires: 1880.

Paul, William. Roses and Rose Culture. Fourth edition. 12mo. London: no date.

——— ———. Roses in Pots. Fifth edition, 12mo. Wood-cuts. London: no date.

——— ———. The Rose Annual, 1859–60, 60–61, 61–62. 3 pamphlets, 8vo. London: no date.

——— ———. Lecture on the Hyacinth, delivered by the request of the Council of the Royal Horticultural Society, April 5, 1864, at South Kensington. 12mo. pamphlet.

——— ———. An Hour with the Hollyhock. Second edition. 12mo. pamphlet. London: 1855.

Robinson, William. The Wild Garden, or our Groves and Gardens made beautiful by the Naturalization of Hardy Exotic Plants; being one way onwards from the Dark Ages of Flower Gardening, with suggestions for the Regeneration of the Bare Borders of our London Parks. New edition, illustrated by Alfred Parsons. 8vo. Many plates and wood-cuts. London and New York: 1881.

Halliday, Robert J. A Treatise on the Propagation and Cultivation of the Azalea Indica. 12mo. 34 wood-cuts. Baltimore: 1880.

Hibberd, Shirley. Greenhouse Favourites; a Description of Choice Greenhouse Plants, with Practical Directions for their Management and Cultivation. Small 4to. Colored plates and wood-cuts. London: 1881.

——— ———. Familiar Garden Flowers. First series. Small 8vo. 40 colored plates, by F. Edward Hulme. London, Paris, and New York: no date.

——— ———. The Garden Oracle and Illustrated Floricultural Year Book. 1881. 12mo. Wood-cuts. London.

Ilford, William Earley, Cond. The Villa Garden and Flower Show Manual, 1881–2, and Amateur's Year Book. 8vo. pamphlet. 60 wood-cuts. London.

Douglas, James, F. R. H. S. Hardy Florists' Flowers; their Cultivation and Management. Small 8vo. London: 1881.

Flowering Plants, with instructions how to cultivate them, etc. Square 12mo. 11 plates. London: no date. [Selected from Maund's Botanic Garden.]

Prior, W. D. Hardy Shrubs, with Descriptions of the most popular kinds, and Practical Directions for their culture and use. Small 8vo. Colored plates and wood-cuts. London and New York: 1881.

Switzer, Stephen. The Practical Kitchen Gardener, etc. Small 8vo. plans. London: 1727.

Iggulden, William. The Tomato, Cultural Directions, Varieties, and Receipts. Small 8vo. pamphlet. London: 1881.

Dennis, J., B. C. L. The Landscape Gardener, containing the History and Principles of Tasteful Horticulture. 8vo. Colored plate. London: 1835.

Elliott, F. R. Handbook of Practical Landscape Gardening, designed for City and Suburban Residences, and Country School-houses, containing designs for lots and grounds, etc. Second edition, enlarged and improved. 8vo. Plates and wood-cuts. Rochester: 1881.

Fawkes, F. A. Horticultural Buildings. Their Construction, Heating, Interior Fittings, etc., with remarks on some of the principles involved, and their application. Square 8vo. 123 wood-cuts. London: no date.

Emmons, Ebenezer, M. D. The Agriculture of New York. 4 vols. 4to. Many colored plates of Fruits, Insects, etc. Albany: 1843–1854.

American Agriculturist, Vol. 18. 4to. Many wood-cuts. New York: 1859. (Towards completing the set.)

Royal Agricultural Society of England. Journal, New Series, Vol. 17, 1881, Part I. 8vo. London: 1881.

Lawes, J. B., LL D., F. R. S., F. C. S., and J. H. Gilbert, Ph. D., F. R. S., F. C. S., F. L. S. Agricultural, Botanical, and Chemical Experiments on the Mixed Herbage of Permanent Meadows, conducted for more than twenty years in succession on the same land. Part I.

4to. London: 1880. [From the Philosophical Transactions of the Royal Society.]

Denton, J. Bailey, M. Inst. C. E., F. G. S. The Farm Homesteads of England. A Collection of plans of English Homesteads existing in different parts of the country, carefully selected from the most approved specimens of Farm Architecture, etc. Large 4to. Many lithographs and wood-cuts. London: 1864.

Morton, John Chalmers. The Prince Consort's Farms: An Agricultural Memoir. 4to. Wood-cuts. London: 1863.

Hoskyns, Chandos Wren. Talpa: or the Chronicles of a Clay Farm. An Agricultural Fragment. Third edition. 16mo. London: 1854.

Steele, Andrew, Esq., of Crosswoodhill. The Natural and Agricultural History of Peat-Moss or Turf-Bog. 8vo. Edinburg, London, and Dublin: 1826.

Tusser, Thomas, Gent. Five Hundred Points of Good Husbandry, etc. Square 12mo. London: 1672.

Hartlib, Samuel. His Legacy of Husbandry, etc. Third edition. Square 16mo. London: 1655.

Olivera, Eduardo. Estudios y Viages Agricolas en Francia, Italia, Suiza, Alemania, Holanda, y Bélgica. 2 vols. 8vo. Buenos Ayres: 1879.

Falconer, H., M. D., F. R. S. Report on the Teak Forests of the Tenasserim Provinces. With other papers on the Teak Forests of India. [Selections from the Records of the Bengal Government.] 8vo. Maps and plate. Calcutta: 1852.

Pappe, L., M. D. Silva Capensis, or a Description of South African Trees and Shrubs, used for Technical and Economical Purposes by the Colonists of the Cape of Good Hope. 8vo. pamphlet. Cape Town and Leipzig: 1854.

Berthelot, Sabino. Arboles y Bosques. 12mo. Santa Cruz de Tenerife: 1880.

Kotschy, Dr. Theodor. Die Eichen Europa's und des Orient's. Folio. 40 colored plates. Text in Latin, German, and French. Vienna and Olmutz: 1862.

Krebs, F. L. Vollständige Beschreibung und Abbildung der Sämmtlichen Holzarten welche im Mittlern und Nördlichen Deutschland wild wachsen. Second edition. 4to. 145 colored plates. Brunswick: 1846.

Jäger, Hermann. Deutsche Bäume und Wälder. Populär-ästhetische Darstellungen aus der Natur und Naturgeschichte und Geographie der Baumwelt. 8vo. Plates and wood-cuts. Leipsic: 1877.

Broillard, Ch. Le Traitement des Bois en France, a l'Usage des Particuliers. 8vo. Paris: 1881.

Pla y Rave, D. Eugenio. Manual de Cultivo de Arboles Forestales. 16mo. Madrid: no date. [Biblioteca Enciclopédica Popular Illustrada.]

Watson, P. W., F. L. S. Dendrologia Britannica: or Trees or Shrubs that will live in the open air of Britain throughout the year. 2 vols. 8vo. 172 colored plates. London: 1825.

London, J. C., F. L. S., H. S., etc. Trees and Shrubs, an Abridgement of the Arboretum et Fruticetum Britannicum. 8vo. 2,109 wood-cuts. London and New York: 1875.

Veitch, James & Sons. A Manual of the Coniferæ, containing a general review of the order, a synopsis of the hardy kinds cultivated in Great Britain, their place and use in Horticulture, etc. 8vo. Many wood-cuts. Chelsea, England: 1881.

Langley, Batty, of Twickenham. A Sure Method of Improving Estates by Plantations of Oak, Elm, Ash, Beech, and other Timber Trees, Coppice-woods, etc. Small 8vo. London: 1728.

Dupont, E. Les Essences Forestières du Japon. 8vo. Paris: 1879.

Zippel, Hermann, und Carl Bollmann. Ausländische Culturpflanzen in Farbigen Wandtafeln. 8vo. with 2 portfolios containing 23 large colored plates. Braunschweig: 1880.

Gross, Heinrich. Die Wichtigeren Handelpflanzen in Bild und Wort. Small folio, 36 colored plates. Esslingen: 1880.

Cazzuola, Ferdinando. Le Piante Utili e Nocive Agli Uomini e Agli Animali che crescono spontanee e coltivate in Italia. 8vo. 264 wood-cuts. Turin and Rome: 1880.

De Bray, Le Bon. Jean. La Ramie, sa Culture, son Rendement, ses Avantages. Second edition, 12mo. Paris: 1879.

Archer, Thomas Croxen. Profitable Plants, a Description of the Principal articles of Vegetable Origin used for Food, Clothing, Tanning, Dyeing, Building, Medicine, Perfumery, etc. 16mo. 20 colored plates. London: 1853.

Christy, Thomas, F. L. S. New Commercial Plants, with directions how to grow them to the best advantage. Parts 1–4, 8vo. Plates and wood-cuts. London: 1878–1881.

Villa Franca, M. le Baron de. Note sur les Plantes Utiles du Brésil. 8vo. pamphlet. Paris: 1880.

Karsten, H. Deutsche Flora. Pharmaceutisch-medicinische Botanik, etc. Lieferungen 1–5, 8vo. 320 wood-cuts. Berlin: 1880.

Salmon, William, M. D. The English Herbal, or History of Plants, etc. Adorned with exquisite Icons or Figures of the most considerable species, representing to the life the true forms of those several Plants. The whole in Alphabetical Order. Folio. Many wood-cuts. London: 1710.

Miller, Joseph. Botanicum Officinale, or a Compendious Herbal, giving an account of all such Plants as are now used in the practice of Physicians, with their Descriptions and Virtues. 8vo. London: 1722.

Meyrick, William, Surgeon. The New Family Herbal, or Domestic Physician, etc. 8vo. 14 plates. Birmingham: 1790.

Hill, Sir John, M. D. The Family Herbal, etc. 8vo. Colored plates. Bungay: 1812.

Medical Botany, or History of Plants in the Materia Medica of the London, Edinburgh, and Dublin Pharmacopeias, arranged according to the Linnæan System. 2 vols. Royal 8vo. 138 colored plates. London: 1821, 1822.

Martius, Dr. C. F. P. de. Icones Selectæ Plantarum Cryptogamicarum quas in itinere per Brasiliam annis 1817–20 instituto collegit et descripsit. Small folio. 76 colored plates. Monachii: 1828–1834.

Eaton, Daniel Cady. The Ferns of North America. 2 vols. Royal 4to. 81 colored plates. Salem: 1879, 1880.

Underwood, Lucius M., Ph. D. Our Native Ferns and how to study them, with Synoptical Descriptions of the North American species. Small 8vo. Wood-cuts. Bloomington, Ill.: 1881.

Martens, M., and H. Galeotti. Mémoire sur les Fougères du Mexique. 4to. 23 plates. Bruxelles: 1842.

Clarke, Charles Baron. A Review of the Ferns of Northern India. 4to. 36 plates. London: 1879. [From the Transactions of the Linnæan Society].

Scott, John, Curator of the Royal Botanic Gardens, Calcutta. Notes on the Tree Ferns of British Sikkim, etc. 4to. 18 plates. London: 1874. [From the Transactions of the Linnæan Society].

Britten, James, F. L. S. European Ferns, with colored illustrations from Nature, by D. Blair, F. L. S. 4to. Parts 5–27, in continuation. London, Paris, and New York.

Bellairs, Nona. Hardy Ferns; How I collected and cultivated them. Small 8vo. London: 1865.

Gatty, Mrs. Alfred. British Sea Mosses, Drawn from Professor Harvey's "Phycologia Britannica." With appendix of new species, etc. 2 vols. royal 8vo. 80 colored plates. London: 1872.

Gifford, Isabella. The Marine Botanist; an Introduction to the Study of the British Sea-weeds, etc. Third edition, greatly enlarged and improved, with illustrations. 16mo. Colored and other plates. Brighton (England), and London: 1853.

Landsborough, Rev. D., A. L. S. A Popular History of British Sea-weeds, etc. Third edition. 16mo. Colored plates. London: 1857.

Farlow, W. G., M. D. Marine Algæ of the New England and Adjacent Coast. Reprinted from the Report of the U. S. Fish Commission for 1879. 8vo. 15 plates. Washington: 1881.

Hervey, A. B., A. M. Sea Mosses. A Collector's Guide and an Introduction to the Study of Marine Algæ. 12mo. 20 colored plates. Boston: 1881.

Lucand, L. Figures Peintes de Champignons, suites a l'Iconographie de Bulliard. First Fasciculus. 4to. 25 water color drawings. No date: no imprint.

Pauchon, A. Recherches sur le Role de la Lumière dans la Germination. 8vo. Plate. Paris: 1880.

Guillemin and Dumas. Observations sur l'Hybridité des Plantes en général, et particulièrement sur celle de quelques Gentianes Alpines. 4 to. pamphlet. Colored plate. [Extrait du tome 1er des Mémoires de la Société d'Histoire Naturelle de Paris. Lu dans la séance du 3 Aout, 1821].

Darwin, Charles and Francis. The Power of Movement in Plants. Small 8vo. 196 wood-cuts. London: 1880.

Alvarez Alvistur, El Ilmo. Sr. D. Luis. Estudio Experimental acerca de las Enfermedades de la Patata (Solanum Tuberosum). 8vo. pamphlet. Madrid: 1880.

Ormerod, Eleanor A., F. M. S., etc. A Manual of Injurious Insects. Small 8vo. Many wood-cuts. London: 1881.

Jackson, Benjamin Daydon, Secretary of the Linnæan Society. Guide to the Literature of Botany; being a Classified Selection of Botanical Works, including nearly 6,000 titles not given in Pritzel's "Thesaurus." Published for the Index Society. Square 8vo. London: 1881.

Britten, James, F. L. S., and Robert Holland. A Dictionary of English Plant Names. Parts 1 and 2. 8vo. London: published for the English Dialect Society, 1878, 1879.

Earle, John, M. A. English Plant Names from the Tenth to the Fifteenth Century. 16mo. Oxford: 1880.

Ulrich, Dr. Wilhelm. Internationales Wörterbuch der Pflanzennamen in Lateinischer, Deutscher, Englischer, und Französischer Sprache. Second edition. 8vo. Leipsic: 1875.

Wills, George S. V. Dictionary of Botanical Terms. 16mo. London: no date.

Morren, Ed. Corrèspondance Botanique. Liste des Jardins, des Chaires, des Musées, des Revues, et des Sociétés de Botanique du Monde. 8vo. pamphlet. Eighth edition, December, 1880. Liége: 1880.

Jougla, le Dr. Les Pyrénées Inconnues. Le Capsir et le Donnezan. 16mo. Paris: no date. [1881?]

Hole, S. Reynolds. Nice and Her Neighbors. Small 8vo. Wood-cuts. London: 1881.

Burbidge, F. W. The Gardens of the Sun, or a Naturalist's Journal on the mountains and in the forests and swamps of Borneo and the Sulu Archipelago. 8vo. Wood-cuts. London: 1880.

Bellairs, Nona. Wayside Flora, or Gleanings from Rock and Field towards Rome. Small 8vo. Plate. London: 1866.

Hulme, F. Edward., F. L S., F. S. A. Familiar Wild Flowers. Second series. Small 8vo. 40 colored plates. London, Paris, and New York: no date.

Hortus Anglicus, or the Modern British Garden, etc. By the author of "The British Botanist." 2 vols. 12mo. London: 1822.

Hope, Frances Jane. Notes and Thoughts on Gardens and Woodlands. Written chiefly for amateurs. Edited by Annie J. Hope Johnstone. Small 8vo. London: 1881.

American Naturalist, vols 12, 13, 14, and 15, for 1878, 1879, 1880, and 1881. 4 vols. 8vo. Philadelphia: 1878–1881.

Müller, E. Flore Pittoresque. Croquis d'apres Nature. 24 folio plates. Paris, Liége, and Berlin: 1872. [Librairie Spéciale des Arts Industriels et Décoratifs.]

Books and Pamphlets Presented.

Masters, Dr. Maxwell T., F. R. S., F. L. S., etc. On the Nomenclature of Garden Plants. Read at the Scientific Committee of the Royal Horticultural Society, 19th November, 1878.

——— ——— ——. Side Lights on the Structure of Composites. Note on the Dimorphism of Restiaceæ. [Journal of Botany, February, 1879, pp. 33–37.] Plate.

——— ——— ——. Note on the Bracts of Cruciferæ [Linnean Society's Journal, Botany, Vol. 14, pp. 391–399.]

——— ——— ——. Remarks on the Superposed Arrangement of the Parts of the Flower. [Linnean Society's Journal, Botany. Vol. 15, pp. 455–478.]

——— ——— ——. Note on the Relations between Morphology and Physiology in the Leaves of certain Conifers. [Linnean Society's Journal, Botany. Vol. 17, pp. 547–552.] Read December 4, 1879.

——— ——— ——. On the Conifers of Japan. [Linnean Society's Journal, Botany. Vol. 18, pp. 473–524.] Plates 19 and 20. 14 wood-cuts. Read December 2, 1880. 6 pamphlets. 8vo. The Author.

Robinson, John. The Pine, its Life and Importance in Essex County. 8vo. pamphlet. [From the Bulletin of the Essex Institute, Vol. 10, Nos. 7, 8, and 9.] The Essex Institute.

——— ——. Our Trees in Winter. 8vo. pamphlet. [From the Bulletin of the Essex Institute.] The Essex Institute.

——— ——. Notes on the Native and Extensively Introduced Woody Plants of Essex County, Mass. 8vo. pamphlet. [From the Bulletin of the Essex Institute, Vol. 11, Nos. 4, 5, and 6, 1879.] The Essex Institute.

——— ——. Ornamental Trees for Massachusetts Plantations. Read at the Winter Meeting of the State Board of Agriculture, December, 1880. 8vo. pamphlet. Boston: 1881. The Author.

——— ——. The Flora of Essex County, Mass. 8vo. Salem: 1880. The Essex Institute.

——— ——. Ferns of Essex County, Mass. 8vo. pamphlet. [From the Bulletin of the Essex Institute, Vol. 7, No. 3, March, 1875.] The Essex Institute.

Torrey Botanical Club, Bulletin of the. 6 numbers for 1880, and 11 numbers for 1881, to complete the set. 17 pamphlets, 8vo. New York: 1880, 1881. W. R. Girard, publisher.

Plumer, Mary A. An Essay on the Dissemination of Seeds. Read before the Essex Institute, July 7, 1881. 8vo. pamphlet. 1881. The Essex Institute.

A List of Plants growing without cultivation in Malden and Medford, Mass. With some Contributions to a Flora of Middlesex County. 18mo. pamphlet. Malden, the Middlesex Institute: 1881. George E. Davenport.

Downing, A. J. The Fruits and Fruit Trees of America. 14th edition. Small 8vo. New York: 1855. With MS. Notes and Corrections by Charles Downing. Also, the Second Revision and Correction, with large Additions, including the Appendices of 1872 to 1881, and containing many New Varieties. By Charles Downing. With nearly 400 Outline Illustrations of Fruits. New York: 1881. Charles Downing.

Downing, Charles. Third Appendix to the Fruits and Fruit Trees of America. 8vo. pamphlet. Outlines of fruits. New York: 1881. The Author.

Brincklé, William D. The North American Pomologist. With colored plates by Alfred Hoffy; and Descriptions by Dr. Brincklé of Fruits of American Origin. 1 vol. 4to., and 1 unbound (duplicate) number. Philadelphia: 1851–1860. Charles Downing.

Lawson, William. A New Orchard and Garden, etc. 8vo. Wood-cuts. London: 1626. Reprinted at Philadelphia: 1858. William C. Eustis.

Laliman, L. Études sur les divers Travaux Phylloxériques et les Vignes Américaines, notamment sur les études faites en Espagne par Don Miret y Tarral, Vocal de la Commission du Phylloxera à Madrid. 8vo. pamphlet. Paris and Bordeaux: 1879, 1880. The Author.

Tisserand, M., Directeur de l'Agriculture. Rapport sur les Travaux Administratifs entrepris contre le Phylloxera, etc. Royal 8vo. pamphlet. Map. Paris: 1881. Ch. Joly.

Hogg, Robert. The Dahlia: its History and Cultivation, with descriptions of all the best show flowers. 8vo. 9 colored plates. London: 1853. Henry K. Oliver.

Paul, William. The Rose Annual for the years 1877–78, 1878–79, 1879–80, 1880–81. 4 pamphlets. 8vo. Colored plates of Roses. Waltham Cross, Herts. The Author.

Cranston, John. Cultural Directions for the Rose, etc. Sixth edition, revised. 8vo. 1877. The Author.

Dalgas, E. Anvisning til Anlæg af Smaaplantninger omkring Gaarde og Haver samt til Anlæg af levende Hegn og Anlæg af Pileculture. Second edition. 8vo. pamphlet. 5 plans. Copenhagen: 1875. Carl Haussen.

Vilmorin's Illustrirte Blumengärtnerei. Zweite auflage neu bearbitet und vermehrt von Th. Rümpler. 8vo. 1,416 wood-cuts. Berlin: 1879. Vilmorin, Andrieux, et Cie.

Vilmorin's Atlas of Flowers. English edition of the Atlas des Fleurs de Pleine Terre. 12mo. 1,128 wood-cuts. Paris: no date. Vilmorin, Andrieux, et Cie.

Vilmorin, Andrieux et Cie. Instructions pour les Semis de Fleurs de Pleine Terre, etc. Sixth edition. 12mo. Wood-cuts. Paris: no date. The Authors.

The Lawson Seed and Nursery Company. Agrostaphia, a Treatise on the Cultivated Grasses and other Herbage and Forage Plants. 4to. Colored plates. Edinburgh and London: 1877. The Authors.

Sharpe, Charles & Co. Permanent Grass Seeds used in British Agriculture, their Description and Properties. 4to. Wood-cuts. Grantham: 1879. The Authors.

B. K. Bliss & Sons. The Potato, How to Cultivate, etc. 8vo. pamphlet. Wood-cuts. New York: no date. The Authors.

Jamaica, Public Gardens and Plantations of. Annual Report, for the year ending September 30, 1880, by D. Morris, M. A., F. G. S., Director. Large 8vo. pamphlet. Kingston: 1881. Charles Gibb.

Joly, M. Ch. Note sur les Expositions Horticoles. 8vo. pamphlet. [Journal de la Société Centrale d'Horticulture de France, August, 1879.] The Author.

——— — —. Note sur deux Sociétés d'Horticulture aux Etats-Unis. 8vo. pamphlet. [Journal de la Société Nationale d'Horticulture, 3e Série, III, 1881.] The Author.

——— — —. Note sur l'Horticulture en Algérie. 8vo. pamphlet. [Journal de la Société Nationale d'Horticulture. 3e Série, III, 1881.] The Author.

Société Centrale d' Horticulture du Département de la Seine Inférieure. Bulletin, Tome 22, Cahier 4, 1880; Tome 23, Cahiers 1 and 2, 1881. 8vo. Rouen: 1879–1881.

Société d' Horticulture de la Sarthe. Bulletin, 3d and 4th Trimestres, 1880; 1st and 2d Trimestres, 1881. 8vo. pamphlets. Le Mans: 1881. The Society.

Société Royale d'Horticulture de Liége. Bulletin Grande Exposition générale & extraordinarie des Produits de l'Horticulture, July 24–28, 1881. The Society.

R. Società Toscana di Orticultura. Bulletino, Vol. 5, Nos. 11 and 12, 1880; Vol. 6, Nos. 1–10, 1881. 8vo. Florence: 1880, 1881. The Society.

The Canadian Horticulturist. Vol. 4, 1881. 8vo. Published by the Fruit Growers' Association of Ontario. Toronto: 1881. The Association.

Montreal Horticultural Society and Fruit Growers' Association of the Province of Quebec. Fifth and Sixth Annual Reports, for the years 1879 and 1880. 2 pamphlets. 8vo. Montreal: 1880, 1881. Also, extra copies for distribution. Henry S. Evans, Secretary.

New York Horticultural Society. Monthly Reports for February, March, April, May, September, and October. 6 pamphlets. 8vo. Other documents. James Y. Murkland, Secretary.

Western New York Horticultural Society. Twenty-first and Twenty-sixth Annual Meetings, Rochester, 1876 and 1881. 2 pamphlets. 8vo. Rochester: 1876 and 1881. P. C. Reynolds, Secretary.

New Jersey State Horticultural Society. Proceedings at the Sixth Annual Meeting, held at Newark, February 10th and 11th, 1881. 8vo. pamphlet. Trenton: 1881. E. Williams, Recording Secretary.

Michigan State Horticultural Society. Tenth Annual Report of the Secretary, 1880. 8vo. Lansing: 1881. Also, extra copies for distribution. Charles W. Garfield, Secretary.

Ohio State Horticultural Society. First Report, 1867; Second, 1868; Third, 1869; Fourth, 1870; Fifth, 1871; Sixth, 1872–3; Tenth, 1876–7; Fourteenth, 1880–81. 8 pamphlets. 8vo. Columbus: 1868–81. George W. Campbell, Secretary.

Indiana State Horticultural Society. Transactions for 1879 and 1880. 2 vols. 8vo. Indianapolis: 1879, 1881. D. E. Hoffman.

Illinois State Horticultural Society. Transactions. New Series. Vol. 14, for 1880 8vo. Chicago: 1881. O. B. Galusha, Secretary.

Kentucky Horticultural Society. Proceedings at the meeting at Bowling Green, January 11, 12, and 13, 1881. 8vo. pamphlet. Frankfort: 1881. Two copies. J. Decker, Secretary.

Wisconsin Horticultural Society. Transactions for 1879–80. 8vo. Madison: 1880. F. W. Case, Secretary.

Iowa State Horticultural Society. Transactions, Vol. 14, for 1879. 8vo. Des Moines: 1880. J. L. Budd, Secretary. Another copy from G. B. Brackett, and a third from C. L. Watrous, President. Transactions for 1880, Vol. 15. 8vo. Des Moines: 1881. C. L. Watrous, President.

Kansas Horticultural Report, Vols. 7, 8, and 10, for the years 1877, 1878, and 1880. 3 vols. 8vo. Topeka: 1878, '79, '80. Also, the Second Report on Forestry, by the Kansas State Horticultural Society, 1880. 8vo. pamphlet. Topeka: 1881. G. C. Brackett, Secretary.

Worcester County Horticultural Society. Transactions for 1847–1851 and 1865; 1855; 1857–1864; 1867, 1869, 1872, 1873, 1874, and 1876. Nine pamphlets. 8vo. George Cruickshanks. Transactions from its formation to the commencement of the year 1847, by George Jaques. Transactions for 1852 and 1853; 1854, 1856, 1866, 1868, 1870. Seven pamphlets. 8vo. C. E. Brooks, Librarian. Transactions for 1880. 8vo. pamphlet, completing the set. Edward W. Lincoln, Secretary.

Maine State Pomological Society. Premium List and Regulations for the Ninth Annual Exhibition, Gardiner, Sept. 20–22, 1881. 8vo. pamphlet. Gardiner: 1881. George B. Sawyer, Secretary.

Pennsylvania Fruit Growers' Society. Report for 1880. 8vo. pamphlet. Plates. Harrisburg: 1880. E. B. Engle, Secretary.

California State Viticultural Commission. First Annual Report. 8vo. pamphlet. Map and plate. Second edition, revised. Sacramento: 1881. John H. Wheeler, Secretary.

United States Department of Agriculture. Report of the Commissioner for the year 1879. 8vo. Many plates and maps. Washington: 1880. Also, Special Reports, Vol. 2, 1879–80, and Vol. 3, 1880–81. 2 vols. 8vo. Maps, etc. Washington: 1881. Hon. George B. Loring, Commissioner.

Campbell, George W., Assistant Commissioner to the Paris Universal Exposition, 1878. Reports of United States Commissioners: Horticulture. 8vo. pamphlet. 1881. The Author.

United States Commissioner of Patents. Report for the year 1852. Part 2, Agriculture. 8vo. Washington: 1853. The Essex Institute.

Maine Board of Agriculture. Twentieth, Twenty-second, and Twenty-fourth Annual Reports of the Secretary, for the years 1875, 1877, and 1880. 2 vols. 8vo. Augusta: 1875, 1877, and 1880. Z. A. Gilbert, Secretary.

Vermont Agriculture. Sixth Report, by the Superintendent of Agricultural Affairs, John B. Mead, 1879–80. 8vo. Montpelier: 1880. Dr. Hiram A. Cutting, Secretary of the State Board of Agriculture.

Massachusetts Board of Agriculture. Twenty-eighth Report of the Secretary, for 1880. 8vo. Boston: 1881. John E. Russell, Secretary.

Connecticut Board of Agriculture. Fourteenth Annual Report of the Secretary, 1880–81. 8vo. Hartford: 1881. T. S. Gold, Secretary.

New Jersey State Board of Agriculture. Eighth Report, for the year 1880. 8vo. pamphlet. P. T. Quinn.

Virginia Commissioner of Agriculture. Third and Fourth Reports, for 1879 and 1880. 2 pamphlets. 8vo. Richmond: 1879, 1880. Dr. Thomas Pollard, Commissioner.

Michigan State Board of Agriculture. Nineteenth Annual Report of the Secretary, for the year ending August 31, 1880. 8vo. Lansing: 1880. The State Agricultural College Library.

Atwater, Professor W. O. Report of Field Experiments with Fertilizers. 1880. 8vo. pamphlet. The Author.

Nebraska Agricultural College. Report of Experiments at College Farm, Lincoln: 1880. 8vo. pamphlet. H. Culbertson, Superintendent.

Dalgas, E. Hede-Moser og Kjærjorde. 8vo. pamphlet. 4 plans. Copenhagen: 1876. Carl Haussen.

International Dairy Fair, held at the American Institute, New York City, December, 1878. Report and Proceedings of the Executive Committee. 8vo. pamphlet. New York: 1879. J. H. Reall.

American Agricultural Association, Journal of the. Nos. 1–4 2 pamphlets. 8vo. Wood-cuts. New York: 1881. J. H. Reall, Secretary.

New England Agricultural Society. Premium List for their Eighteenth Annual Exhibition in connection with the Worcester Agricultural Society, at Worcester, Mass., September 6–9, 1881. The Society.

Iowa State Agricultural Society. Report of the Board of Directors for the year 1880. 8vo. Des Moines: 1881. John R. Shaffer, Secretary.

Essex Agricultural Society. Transactions for 1880. 8vo pamphlet. Charles R. Preston, Secretary.

Armada (Michigan) Agricultural Society. Premium List for 1881. 24mo. pamphlet. Romeo: 1881. Dr J. E. Barringer, Secretary

Brooklyn Park Commissioners. Report from January, 1874, to December 31, 1879. 8vo. pamphlet. Maps and photographs. Brooklyn: 1880. Also Report for the year 1880. 8vo. pamphlet. Brooklyn: 1881. Edward H. Brundage.

Boston Park Commissioners. Fifth and Sixth Annual Reports for the years 1879 and 1880. 2 pamphlets. 8vo. Maps. Boston: 1880, 1881. The City of Boston.

Chicago South Park Commissioners. Report to the Board of County Com-

missioners of Cook County, from December 1, 1879, to December 1, 1880. 8vo. pamphlet. 2 maps. Chicago: 1880. H. W. Harmon, Secretary.

Mount Auburn Cemetery. Annual Reports of the Trustees for 1869, 1879, and 1880. Three pamphlets. 8vo. Boston: 1870, 1880, 1881. J. Harris Reed, Secretary.

Boston Society of Natural History. Proceedings, Vol. 18, Part 2; Vol. 19, Part 1; Vol. 20, Part 3. Three pamphlets. 8vo. Boston: 1876, 1877. Memoirs, Vol. 2, Part 3, Nos. 3 and 4. 2 pamphlets. 4to. Boston: 1874. The Society.

Essex Institute, Bulletin of the. Nine numbers to complete the set. 8vo. The Essex Institute.

Science Advocate. Vol. 2, 1881. 8vo. Issued by the Natural Science Society of Ateo, N. J. The Society.

Beretning fra den Kongelige Veterinær-og Landbohojskole for Undervisningsaaret fra 23de August, 1877, til 22de August, 1878. 8vo. pamphlet. Copenhagen: 1879. Carl Haussen.

Maine College of Agriculture. Annual Report of the Trustees and Officers. 8vo. pamphlet. Augusta: 1880. M. C. Fernald, President.

Kansas State Agricultural College. Eighteenth Annual Catalogue of Officers and Students, 1880–81. 8vo. pamphlet. Manhattan: 1881. Milan L. Ward, A. M., Librarian.

Missouri University. Thirty-ninth Catalogue, 1880–81. 8vo. pamphlet. 5 plates. Jefferson City: 1881. G. C. Swallow, Professor of Agriculture.

Drury College, Springfield, Greene Co., Mo. Eighth Annual Catalogue, 1880–81. 8vo. pamphlet. Springfield: 1881. Rev. Nathan J. Morrison, D. D., President.

Astor Library. Thirty-second Annual Report of the Trustees, for the year ending December 31, 1880. 8vo. pamphlet. Albany: 1881.

Mercantile Library Association of the City of New York. Sixtieth Annual Report of the Board of Direction, May, 1880, to April, 1881. 8vo. pamphlet. New York: 1881.

Iowa State Library. Report of the Librarian for the years 1880 and 1881. 8vo. pamphlet. Des Moines: 1881. Mrs. S. B. Maxwell, Librarian.

American Antiquarian Society. Proceedings at the Annual Meeting, Worcester, October 21, 1880, and at the Semi-Annual Meeting, held at Boston, April 27, 1881. 2 pamphlets, 8vo. Worcester: 1881. The Society.

New England Historic Genealogical Society. Proceedings at the Annual Meeting, January 5, 1881. 8vo. pamphlet. Boston: 1881. Hon. Marshall P. Wilder, President.

United States Commissioner of Education. Report for 1879. 8vo. Washington: 1879. Hon. John Eaton, Commissioner.

Wilber, C. D., LL. D., etc. The Great Valleys and Prairies of Nebraska and the Northwest. Third edition. Small square 8vo. Omaha: 1881. Leavitt Burnham, Land Commissioner Union Pacific Railway.

Periodicals Taken.

English. — Gardeners' Chronicle.
Gardeners' Magazine.
Journal of Horticulture and Cottage Gardener.
The Garden.
Gardening Illustrated.
Curtis's Botanical Magazine.
Floral Magazine.
Florist and Pomologist.
Journal of Botany.
Country Gentleman's Magazine.
Farmer's Magazine.
Journal of Forestry.

French. — Revue Horticole.
Revue des Eaux et Forêts.

Belgian. — Illustration Horticole.
Flore des Serres.
Belgique Horticole.
Revue de l' Horticulture, Belge et Étrangère.

German. — Botanische Zeitung.
Gartenflora.

American.—Country Gentleman.

Periodicals Presented.

New England Farmer.
Massachusetts Ploughman.
American Cultivator.
American Agriculturist.
American Garden.
Vick's Illustrated Monthly Magazine.
Empire State Agriculturist.
Gardener's Monthly.
Seed Time and Harvest.
Botanical Gazette.
Botanical Index.
Semi-Tropic California.
American Rural Home.
Rural New Yorker.
Maine Farmer.
Home and Farm.
Prairie Farmer.
Maryland Farmer.
The Industrialist.

Pacific Rural Press.
Florida Despatch.
Boston Daily Advertiser.
Boston Morning Journal.
Boston Post.
Boston Daily Globe.
Boston Evening Transcript.
Daily Evening Traveller.
The Cottage Hearth.

Report of the Secretary and Librarian,

FOR THE YEAR 1881.

The many changes which have taken place during the year now drawing to a close, together with the meeting of the American Pomological Society, have made it an unusually busy one. Notwithstanding this, and the added duties of Librarian, the belief which I expressed in my last report that the Transactions — which when it was written were in arrears, owing to my time having been so largely occupied in getting the History of the Society through the press — would be brought up, has been verified, though not at as early a day as if the changes alluded to had not occurred. The second part of the Transactions for 1881 has been begun and carried as far as is possible at present.

Besides the calls for naming fruits, such as have been mentioned in former reports, many specimens of flowers, particularly native plants, have been presented for name. With the help of experts in botany almost all of these have been identified, and I wish here to acknowledge my indebtedness to the Professor of Botany and to other students of native plants for their valuable assistance in this work. I would take the opportunity to remark, for the information of all who may wish to ascertain the names of plants, that it is extremely difficult to identify them by a single leaf, as is sometimes expected, or even by several leaves; but, if possible, the flowers and fruit should be procured, and if the leaves vary in character specimens of the root, stem, and floral leaves should be presented. So difficult is it to identify plants by a few leaves, that some of our most eminent botanists refuse to attempt it, without specimens of the flowers and the different classes of leaves. I have not thought it best to pursue this course, and in most instances have been successful in ascertaining the names of plants when the specimens presented were far inferior to what is desirable, and I make these suggestions not merely with the object

of saving labor in identifying plants, but because the chances of naming them, to the satisfaction of the inquirers, are much greater when good specimens are brought, than if we have only two or three leaves.

In regard to the Library, I would say that in addition to the routine work of purchasing books, keeping the various records required, delivering books for use here or for home study, etc., my attention has been especially directed to ascertaining what sets of periodicals and other books are imperfect and should be completed. Much work is needed in this direction, and a beginning has at least been made. In connection with the allusion above to the records, I may mention, that the name of every book added to the Library is required to be entered more or less fully in the various records, probably six times on the average.

To those who are in the habit of using the Library freely, it is unnecessary to say anything of its great and yearly increasing value. But these are but a small part of the whole Society, and it is to be hoped that as the Library grows from year to year, the number of members who avail themselves of its invaluable privileges will increase, and that the benefits which it will confer in the future may be more nearly commensurate with its capabilities. In this connection it will be of interest to chronicle the growth of a taste in the community for artistic work, as shown by the increased number of calls for correct plates of flowers to assist in painting and embroidery.

ROBERT MANNING,

Secretary and Librarian.

TREASURER'S REPORT,

FOR THE YEAR 1881.

RECEIPTS.

Balance on hand, January 1, 1881,	$ 3,675 06	
Rent of Stores,	10,274 94	
" " Halls,	5,398 17	
Admissions and Assessments,	1,242 00	
Mount Auburn,	2,187 26	
Four Exhibitions,	1,637 00	
Sale of History,	278 50	
Sundries,	16 85	
Interest on Bonds, C. B. & Q. R. R.,	105 00	
Amount of Prizes not drawn,	293 40	
		$25,108 18

EXPENDITURES.

Salaries,	$2,325 00	
Labor,	1,083 23	
Incidentals,	238 75	
Heating and Water, less paid by tenants,	482 81	
Gas,	1,025 59	
Repairs on Furniture and Fixtures,	404 95	
Taxes,	3,127 50	
Committee of Arrangements,	250 00	
Library Accessions, Stickney Fund,	700 00	
" " Periodicals, Binding, etc.,	199 88	
Repairs on Building,	619 62	
Expenses of Four Exhibitions,	1,152 94	
Stationery, Printing, and Postage,	1,622 31	
Interest,	3,899 98	
Garden Committee,	17 45	
Insurance,	30 00	
Extra Repairs on Building,	5,292 55	
Balance of cash on hand to new account,	2,635 62	
		$25,108 18

ASSETS.

Real Estate, Furniture, and Exhibition ware,		$256,585 56
Library last year,	19,846 24	
Added this year,	899 88	
		20,746 12
Bonds, Chicago, Burlington, and Quincy, at par,		1,500 00
Stereotype Plates, etc., and copies of History,		421 50
Cash on hand, December 31, 1881,		2,635 62
		$281,888 80

LIABILITIES.

Mortgage debt bearing interest at 5½ per cent., payable September, 1883,	$60,000 00	
Loan, without interest, payable to Harvard College in 1899,	12,000 00	
Note due Massachusetts National Bank,	12,000 00	
		$84,000 00
Surplus,		$197,888 80

MEMBERS.

Number of life members by last report,	572		
Added,	20		
Commutations,	5		
	597		
Deceased,	15		
		582	
Annual Members,	271		
Added,	15		
	286		
Commuted,	5		
Deceased,	6		
	11		
		275	
Total membership,			857

Income from above:

20 Life Members,	$600 00
15 Annual "	150 00
5 Commutations,	100 00
196 Assessments,	392 00
	$1,242 00

The Report of the Finance Committee upon the former Treasurer's accounts is as follows:

The Massachusetts Horticultural Society in account with E. W. Buswell, *Treasurer.*

1881.	By balance in treasury, Jan. 7, 1881, . .		$ 3,675 06
	" Total income as per receipt book, . .		18,174 76
			$21,849 82
1881.	To cash paid as per disbursement book, ...	$16,662 02	
	Balance to new account, . .	5,187 80	
			$21,849 82

Boston, June 10, 1881. We have examined the above, and find it correct, and the balance of cash on hand fifty-one hundred eighty-seven dollars and eighty cents, as stated.

C. O. Whitmore, Francis B. Hayes, } *Finance Committee.*

The Finance Committee having audited the accounts of the undersigned, made the following report:

The Massachusetts Horticultural Society in account with George W. Fowle, *Treasurer.*

1881.	By balance in treasury, June 3, 1881, . .		$ 5,187 80
	Total income as per receipt book, . .		27,661 02
			$32,848 82
1881.	To cash paid as per disbursement book, ...	$30,213 20	
	Balance to new account, . .	2,635 62	
			$32,848 82

Boston, Dec. 31, 1881. We have examined the above account and find it correct, and the balance of cash on hand two thousand six hundred and thirty-five dollars and sixty-two cents as stated.

C. O. Whitmore, Francis B. Hayes, } *Finance Committee.*

The undersigned entered upon the discharge of his duties as Treasurer on June 1, 1881, his predecessor holding the office during the previous portion of the past year. The preceding items

of receipts and expenditures are taken from the Treasurer's books. The expenditures for repairs have been considerable during the past year, being required to put the building in good order, and make improvements which were demanded, all of which were authorized by vote of the Society. For what has been accomplished, the expenditures have been quite reasonable. We have to compete with rival halls, and now, since the improvements have been made, our halls are more in request than they were before, and, in consequence thereof, we have already been considerably benefited by an increase of rentals. Yet we may not expect, in future, so large an income from the halls as we have formerly received, as new halls have lately been completed near our building. We must look to the improvement of our stores for a larger income, which is required for the purposes of the Society. Our receipts from Mount Auburn for the past year fell short of the previous year, but we hope we may obtain, in the future, an increase of receipts, as a portion of the income, which otherwise we should have received, was appropriated by the Proprietors of Mount Auburn to the improvement of newly purchased land, from the sales of which we may expect remunerative returns.

GEO. W. FOWLE, *Treasurer.*

Dr. *Massachusetts Horticultural Society, in account with the Proprietors of the Cemetery of Mt. Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1881.

Cost of filling up and improving land at Mt. Auburn, for the year ending December 31, 1881; the Massachusetts Horticultural Society being charged with their proportion of the same:			By Sales in January,	$215 00
Pearl Avenue to Eagle Avenue,	$5,108 62		" " " April,	2,928 50
One-quarter of	$5,108 62	$1,277 15	" " " May,	3,486 50
Balance due Massachusetts Horticultural Society,		2,187 26	" " " June,	688 38
			" " " July,	1,530 00
			" " " August,	1,421 50
			" " " September,	747 50
			" " " October,	1,624 00
			" " " November,	1,660 00
			" " " December,	459 25
			Net amount receipts from Receiving Tomb,	537 00
				$15,297 63
			Less graves repurchased,	40 00
				$15,257 63
			Deduct for Annual Expenses,	1,400 00
			Mass. Horticultural Society one-fourth part of	$13,857 63
		$3,464 41		$3,464 41

E. & O. E.

H. B. MACKINTOSH, *Treasurer.*

December 31, 1881.

MASSACHUSETTS HORTICULTURAL SOCIETY,

To THE PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN, *Dr.*

For one-fourth part of the following expenditures for grading new lands for sale, during 1881:

Pearl Avenue to Eagle Avenue.

1,028¾ days, men,	. . . . .	$2,057 50	
871¾ " man and horse,	. . . . .	3,051 12	
			$5,108 62
One-fourth part is,	. . . . .		$1,277 15

MOUNT AUBURN, December 31, 1881. J. W. LOVERING, *Supt.*

I certify the foregoing to be a true copy of accounts of improvements fo the year 1881, rendered by the Superintendent.

H. B. MACKINTOSH, *Treasurer.*

MISCELLANEOUS PAPERS.

The Committee on Publication have much pleasure in adding to these Transactions, a paper on Edible Fungi, by Dr. E. Lewis Sturtevant, and also a Calendar of the Flowering of Trees and Shrubs in 1881, by John Robinson, Professor of Botany and Vegetable Physiology to the Society, in continuation of that for 1880, which may be found in Part I of the Transactions for that year, page 161.

A LIST OF EDIBLE FUNGI,

COMPILED BY E. LEWIS STURTEVANT, M. D., SOUTH FRAMINGHAM, MASS.

Agaricus.

The name of Mushroom is applied collectively to certain of the larger fungi, but is more usually restricted to *Agaricus campestris*, and the species confounded with it. There are many varieties of mushrooms which can be classed as edible, but as the bad properties depend upon the degree in which a poisonous alkali is developed—a circumstance which varies with climate and situation—even those species which are usually wholesome may at times prove deleterious. Thus the common mushroom is said to be poisonous in Italy, although a most valued article of food almost everywhere amongst European epicures, and largely an object of cultivation. Dall mentions eating of two or three species, in Alaska, all poisonous in our climate, but in that extreme northern region proving to be innocuous and eatable, though quite tasteless. Nievhoff, in 1665, mentions mushrooms or toadstools in Batavia, called *Kulet* by the Malayans, and *Jumor* by the Javanese; some of a red, others of a pale green color, and some of which are used "here like as in Europe, and are eaten with wine and sugar." In Japan, Thunberg in 1775 saw various sorts which were in great request, common in the shops, dried for sale, and in almost daily use both

for soups and sauces. Mushrooms were held in detestation by the ancient Hindus, the legislator Yama declaring the eating them "whether springing from the ground or growing on a tree fully equal in guilt to the slaying of Brahmen" (W. Jones). They are eaten now by the Lepchas of India (Hooker). The mushroom appears not to have been cultivated by the Romans of antiquity. Pliny, however, mentions that they were highly prized by the epicures of his time, and notices those which grew at the roots of the oak as being highly esteemed. In Poland and Russia above thirty sorts are eaten by the peasantry, not only in their fresh state, but dried and preserved for winter consumption; in Lapland, called *mochoviki* and used by the people. In France, Germany, and Italy, says Badham, funguses not only constitute for weeks together the sole diet of thousands, but the residue, either fresh or dried, or variously preserved, in oil, vinegar, or wine, is sold by the poor, and forms a valuable source of income to many who have no other produce to bring into the market. In England many species are consumed in a fresh state, or made into sauces. In 1876 some one hundred and forty tons of edible fungi were exported from the island of Otaheite in a dried state, with a declared value of $28,000. In America they prove a valued food to the epicure. Du Pratz, in his History of Louisiana, notes the use of a kind of agaric by the colonists of epicurean tendencies. Not only in China, says Cooke, but also in the Himalayas and in the Rocky Mountains, as well as in Terra del Fuego, New Zealand, and Australia, to say nothing of European countries, certain species afford wholesome and nutritious food.

Agaricus campestris, L.—A cultivated fungus, which is quite variable. Badham enumerates five varieties. The wild form is a native of northern climates. Cooke enumerates var. *pratensis*, Vitt., in pastures; var. *silvicola*, Vitt., in woods; var. *hortensis*, Ault., the cultivated form; var. *vaporarius*, Otto; var. *rufescens*, Beck. The Paris growers have several varieties: the small white, greatly esteemed and always eaten whole; the large white; the cream-colored; and the gray, very large, sometimes measuring thirteen and one-half inches in diameter. This mushroom is condemned in the markets of Rome. In Milan but recently eaten. In the Venetian States scarcely known. It is regarded as a suspicious species in Hungary. At Vienna it meets with a welcome. In France, in Britain, and in the United States, it is the one most extensively

consumed. The daily production of mushrooms in and about Paris is estimated at about twenty-five tons (Robinson). They are eaten fresh, canned, dried, grated to powder, and bottled in butter or oil.

Called in French *champignon comestible;* in Dutch *hampernoelje;* in German *essbare blatterschamme;* in Spanish *seta;* in Italian *pratajolo* or *pratolino.*

Among the species of mushrooms which are used as food, we note the following:—

A. acerbus, Bull.—Eaten at Milan (Vittadini).

A. ægerita, Fr.—An excellent mushroom, of an agreeable odor and flavor (Cordier).

A. albellus, DC.—Classed by Cooke as esculent.

A. alutaceus, Pers. (Syn. *Russula acres*, Badh.)—Ranked by Vittadini among the safe kinds and even when raw "a dainty food." Berkeley reports it as esculent when young, but remarks that acrid specimens occur. Badham does not advise its use as food.

A. amethystinus, Scop.—Cordier says esculent, and of exquisite taste.

A. amygdalinus, Curt.—Found in the United States. Dr. Curtis says it can scarcely be distinguished when cooked from the common mushroom.

A. anisatus, Pers.—Said by Unger to be edible.

A. Aquifolii, Pers.—Said by Unger to be edible.

A. aromaticus, Roques.—Called an edible species by Unger.

A. arvensis, Schoef.—Sent in enormous quantities to Covent Garden, London, where it frequently predominates over *A. campestris.* Some persons prefer this, which has a stronger flavor, to the ordinary mushroom, and it is the species most commonly sold in the autumn in the streets of London and provincial towns. According to Persoon, it is preferred in France; and in Hungary it is considered as a special gift from St. George. It has acquired in England the name of horse mushroom, from the enormous size it sometimes attains. Withering mentions a specimen that weighed fourteen pounds (Cooke). Occurs in California (Harkness & Moore, "California Fungi").

A. arvensis, Schoef., var. *exquisitus*, Vitt.—Said by Mrs. Hussey to be esculent, and to possess a resemblance in taste to bitter almonds.

A. arvensis, Schoef., var. *villaticus*, Brond., which often forms rings in meadows in England, is said by Cooke to be esculent.

A. atramentarius, Bull.—The young specimens are said by Badham to form a fine ketchup.

A. attenuatus, DC.—Classed by Unger as edible.

A. auratus, Krombh.—Stated by Cordier to be sought as a food in middle France.

A. aureus, Pers.—Classed by Unger as edible.

A. aurantiacus.—Was known to the Romans under the name of Boletus, and as always occurring in the chestnut forests of southern Europe. It is this species which Nero calls *cibus deorum*, or food of the gods (Unger).

A. Auricula, DC.—Classed by Unger as edible.

A. bombycinus, Schoef.—Eaten in Tuscany (Cordier) and is enumerated by Curtis as esculent in the United States.

A. brevipes, Bull.—Stated by Paulet to be esculent and very delicate.

A. Cæsareus, Scop.—Called in Germany *Kaiserling*, and universally eaten on the continent of Europe. In the United States it grows in great quantities in oak forests, but Dr. Curtis pronounces it the most unpalatable of fungi.

A. cæspitosus, Curt.—Found in the United States in enormous quantities, and is reckoned by Dr. Curtis a very fair esculent, better than *A. melleus*, Fr.

A. caligatus, Viviani.—Called esculent by Cordier.

A. candicinus, Badh.—One of the best funguses of southern Italy (Badham). It makes the greatest show in the Italian market places (Cooke).

A. cardarella, Fr., of Europe, is enumerated as edible by Mueller.

A. castaneus, Bull.—Reported by Berkeley as esculent.

A. cepæstipes, Weinm.—Called esculent by Cordier.

A. Columbetta, Fr.—Enumerated by Curtis as edible in the United States. It is found in Britain, but not eaten (Cooke).

A. comatus, Badh.—Young specimens used for making ketchup (Badham).

A. consociatus, Curt.—A species confined to the United States, and is enumerated by Curtis as edible (Cooke).

A. cortinellus, DC.—Edible according to Unger.

A. cretaceus, Fr.—In France considered edible, and of excel-

lent quality (Cordier). Said by Curtis to be edible in the United States.

A. cyathiformis, Bull. (Syn. *A. platyceps*, Pers.; *A. tardus*, Pers.; *A. æreus*, Pers.)—Called edible by Cordier.

A. cylindraceus, DC.—Called esculent by Cordier.

A. dealbatus, Pers.—Cooke says a dish of young individuals makes a most excellent stew. Marked by Harkness & Moore as edible in California.

A. deliciosus, L.—One of the best agarics. Its flesh is firm, juicy, sapid, and nutritious. The milk is red and subsequently turns green (Badham). Sowerby says it is very luscious eating. James Smith says it is the most delicious mushroom known.

A. dimidiatus, Bull. (Syn. *A. cornucopiæ*, Pers.; *A. inconstans*, Pers.; *Panus conchatus*, Fr.)—Cordier says edible and of agreeable savor and odor.

A. dryinus, Pers.—Called edible by Cordier.

A. eburneus, Bull. (Syn. *Hygrophorus eburneus*, Fr.)—Said by Cordier to be esculent, and to possess an agreeable odor and flavor. It occurs in South Carolina, and is edible (Curtis).

A. Eryngii, DC., of Europe, is edible (Mueller).

A. esculentus, Jacq. (Syn. *A. perpendicularis*, Bull.)—Said by Cordier to be esculent, and in spite of its small size to be held in esteem in Austria. Eatable, says Berkeley, but not much esteemed, on account of its bitter flavor. It is called at Vienna, where large baskets appear in the markets in spring, *nagelschwamme*. The smallest of the edible species, says Cooke. It occurs in the United States.

A. excoriatus, Schaeff., a pasture mushroom, is excellent (Cooke). Occurs in the United States (Curtis; Harkness & Moore).

A. exquisitus, Badh. (Syn. *A. Georgii*, With.)—Often attains the weight of five or six pounds. It is considered less delicate than *A. campestris* in Britain, but looked upon in Hungary as a special gift from St. George. Persoon describes it as superior to *A. campestris* in smell, taste, and digestibility, and hence generally preferred in France.

A. extinctorius, L.—An edible species of Europe.

A. fossulatus, Cooke.—Found on the Cabul hills, where it is collected and dried, and forms an article of commerce with the plains (Cooke).

A. fragrans, Sow.—This fragrant species, with a sweet, anise-like odor, is pronounced edible by Cordier.

A. frumentaceus, Bull., of the United States, is commended as edible by Dr. Curtis.

A. fusipes, Bull. (Syn. *A. crassipes*, Schaeff.), if carefully dried can be kept to enrich gravies, says Mrs. Hussey. It cannot be commended for a stew on account of its toughness, notwithstanding the agreeableness of its flavor. Badham says the young plants make an excellent pickle, while the full grown ones may be stewed. Found esculent in California (Harkness & Moore).

A. gambosus, Fr. (Syn. *A. Gregorii*, L.)—Esculent, says Cordier, and frequently eaten in Scandinavia. Cooke says it is the *moucheron* or *mousseron* of the French, and highly esteemed in France and Italy. Guillarmod includes it amongst Swiss esculents. Professor Buckman says it is one of the earliest and best of English mushrooms.

A. Garridelli, Fr.—Pronounced esculent by Cordier. Its odor and flavor are agreeable.

A. geminus, Paul.—Paulet says this species is very good to eat.

A. Georgii, L. (Syn. *A. graveolens*, Sow.; *A. prunulus*, Vitt.)—Mrs. Hussey says the odor is like newly ground flour; the taste agreeable raw, scent extremely powerful when dried, and excellent for food.

A. geotropus, Bull.—This species, especially one of its varieties, is considered excellent; equal to many, and superior to most of our edible fungi. It is recognized as esculent in the United States as well as on the continent of Europe (Cooke).

A. giganteus, Schoef.—The scent is slight but agreeable. Esculent (Mrs. Hussey).

A. gilvus, Pers.—Called edible by Cordier.

A. glandulosus, Bull.—Recorded as edible in the United States (Cooke).

A. gracilentus, Kromb.—Esculent (Cooke).

A. graveolens, Pers.—Delicate to eat, and is used frequently in middle France (Cordier).

A. griseus, Pers.—Esculent, according to Reveil (Cordier).

A. gymnopodius, Bull.—Recorded as esculent by Cordier.

A. haematochilis, Bull.—Stated by Unger to be esculent.

A. hariolorum, Bull.—Said by Bulliard to have a very agreeable taste, and is nearly without odor. Esculent.

A. heterophyllus, Fr.—Mrs. Hussey says the taste is mild, like pure hog's lard, never acrid; an extremely excellent article of food. Badham says it tastes like the crawfish when grilled. Vittadini and Roques pronounce it a most excellent species for food purposes.

A. holosericeus, Fr.—Pronounced esculent by Cooke.

A. hypopithyus, Curt.—Confined to the United States, and enumerated by Curtis as esculent.

A. ilicinus. DC.—Classed by Unger as edible.

A. illinatus, Fr.—Edible in California (Harkness & Moore).

A. incarnatus, Pers.—Called edible by Unger.

A. infundibuliformis, Bull.—Called edible by Unger.

A. laccatus, Scop. (Syn. *A. amethysteus*, Bull.)—Called edible by Cordier, but the stalks are rejected as being too leathery.

A. lacrymabundus, Cooke.—This doubtful species is used by the smaller ketchup manufacturers in Britain (Cooke).

A. leiocephalus, DC.—The flesh of this esculent species is firm, and the odor agreeable (Cordier).

A. leochromus, Cooke.—Certainly wholesome (Cooke).

A. lepidus, Fr. (Syn. *Russula lepida*, Fr.)—Flesh extremely firm, crisp, and brittle, perfectly mild, esculent, and excellent (Mrs. Hussey).

A. longepis. Bull.—Called edible by Harkness & Moore.

A. marzuolus, Fr.—An European species; edible (Mueller).

A. mastoideus, Fr.—Esculent (Cooke). Occurs in the United States (Curtis).

A. maximus, Fr., of the United States, is pronounced esculent by Cooke. It is figured by Sowerby under the name of *A. giganteus*.

A. melleus, Vahl.—A species common on rotten stumps in England, but it is very acrid, and would not be an acceptable article of food in England even if free from danger (Berkeley). One of the commonest of all edible fungi in the public markets of Vienna, where it is called *hallimasche*. Esculent but not commendable (Cooke). Catalogued as edible by Curtis, of North Carolina, and Harkness & Moore, of California.

A. mouceron, Bull. (Syn. *A. prunulus*, Vitt.)—Classed as edible by Unger.

A. mucidus, Schrad.—Esculent according to Chevalier (Cordier).

A. muscarius, Cooke.—Many instances have been recorded of

poisoning by this fungus, yet it cannot be doubted that it is eaten in Russia. It is supposed that the poisonous quality is removed by the mode of cooking, salt and vinegar being used, and long boiling (Cooke).

A. mutabilis, Schoef. (Syn. *A. marginatus*, Batsch.; *A. candicinus*, Pers.; *A. annularius*, Bull. pl. 543, O. P.)—(*A. annularius*, Bull. pl. 377 is poisonous.)—Mrs. Hussey says it is esculent, and its flavor peculiar, resembling gingerbread. Called esculent by Cooke. Catalogued as esculent in the United States (Curtis; Harkness & Moore).

A. nebularis, Batsch. (Syn. *A. pileolarius*, Bull.; *A. canalicalatus*, Schurm.; *A. turgidus*, Grev.; *A. caseus*, With.)—Mrs. Hussey says this is extremely tender and digestible when carefully cooked. Persoon recommends it as very agreeable in flavor. All who have tried this fungus, says Cooke, agree that it is of a most delicate flavor, and easy of digestion. Badham says the odor is strong, like that of curd cheese, and the taste is grateful. Called esculent in the United States (Curtis).

A. nudus, Bull.—Cordier says esculent; very good and delicate; feeble odor, agreeable flavor.

A. odorus, Bull.—Cooke says this species has the reputation of supplying a rather delicate, even exquisite, dish. It does not appear to be eaten on the continent of Europe, and Roques considers its alimentary qualities as doubtful. Classed as edible by Mueller. Catalogued as edible by Harkness & Moore for California.

A. Oniscus, Fr.—Occurs in California, and is called edible by Harkness & Moore.

A. Orcellus, Bull. (Syn. *A. pallidus*, Sow.)—Odor of fresh meal and cucumbers, esculent and excellent (Mrs. Hussey). A very delicate mushroom. It has the peculiar smell of a cucumber rind or syringa leaf (Badham).

A. oreades, Bolt.—A little buff fungus of excellent flavor, which when dried may be kept for years. It is called Scotch bonnets. It is famous for the flavor it imparts to rich soups and gravies. It is much used in a dried state in France and Italy. (Badham).

A. ostreatus, Jacq.—So universally eaten that it is included in almost every list and book on edible fungi. It is the most common species in Transylvania, tons of it sometimes appearing in

the markets. It does not possess that delicate flavor which is found in many species, and although extolled by some beyond its merits, it is nevertheless perfectly wholesome, and, when young and carefully cooked, not to be despised (Cooke). It is found growing on the poplar and willow (Vittadini), apple and laburnum (Berkeley), elm and ash (Badham). It occurs in the United States and is listed as esculent.

A. ovinus, Bull.—Edible according to Unger.

A. ovoideus, DC.—Classed by Unger as edible.

A. palomet, Thore. (Syn. *A. virens*, Scop.)—Called edible by Unger.

A. personatus, Fr. (Syn. *A. bicolor*, Pers.)—Flesh very thick, solid, but not tough, mottled; flavor pleasant with a slight earthiness, resembling beet-root; esculent (Mrs. Hussey). Sold under the name of Blewitts in Covent Garden market, London. When not water-soaked it is a fine, firm fungus with a flavor of veal (Badham).

A. petaloides, Bull.—Called edible by Cordier.

A. pileolarius, Sow.—Flesh white, moderately thick in the centre; flavor and smell agreeable: esculent (Mrs. Hussey).

A. piperatus, Scop.—Though very acrid when raw, it loses its bad qualities entirely by cooking, and is extensively used on the continent of Europe, prepared in various ways (Badham).

A. pometi, Fr.—Recorded as edible in the United States (Harkness & Moore).

A. praecox, Pers.—According to Lenz and Schaeffer, esculent.

A. praestans, Cord.—Called edible by Cordier.

A. pratensis, Schaeff. — Edible in California (Harkness & Moore).

A. procerus, Scop.—The *parasolschwam* of the Germans, the *columelle* of the French, the *rubbola maggiore* of the Italians, the *cogomeles* of the Spaniards. One of the most delicate funguses of England (Badham) and sold in Covent Garden market (Berkeley). In Italy and France it is in high request. In Austria, Germany, and Spain is eaten. Occurs in Pennsylvania (Cooke) and California (Harkness & Moore).

A. prunulus, Fr. (Syn. *A. Sowerbeii*, Kromb.)—Flesh white; odor agreeably of flour; esculent (Mrs. Hussey). *A. prunulus*, Vitt., (Syn. *A. mouceron*, Bull.) is said by Badham to be the most savory fungus with which he is acquainted. Balbi calls it a rare and most delicious agaric, and says it is eaten fresh.

A. pudicus, Bull.—Esculent, says Berkeley. Certainly wholesome, says Cooke.

A. rachodes, Vitt., in a youthful state is excellent eaten in substance; when old, and in texture like chamois leather, the ketchup it affords is scanty in quantity but super-excellent in quality (Mrs. Hussey). It may be eaten (Cooke). Catalogued for the United States by Curtis, and by Harkness & Moore.

A. radicatus, Bull.—Enumerated as edible in the United States (Cooke).

A. rhodopolius, Fr.—Esculent according to Paulet.

A. ruber, Schoef. (Syn. *A. griseus*, Pers.)—The *colomba rossa* of the Tuscans, and delicate and light of digestion (Badham).

A. rubescens, Pers. (Syn. *A. verrucosus*, Bull.)—Cordier says it is largely consumed in Lorraine, being very delicate. Roques speaks equally well of it. Dr. Curtis enumerates it as edible in the United States.

A. Russula, Schaeff.—Cordier says it is used for food in Austria. It is enumerated by Curtis as edible for the United States.

A. salignus, Fr.—Rare in England, but not uncommon on the continent of Europe and in the United States. In Austria it is commonly eaten (Cooke).

A. sambuciensis, Cord.—Classed as edible by Unger.

A. sapidus, Poir.—Called edible by Unger.

A. scorodonius, Fr.—Said by Cordier to be edible, and in frequent use in Lusace, France.

A. scruposus, Fr., has the odor of fresh meal, is of an agreeable taste and flavor, and is esculent (Cordier).

A. silvaticus, Schaeff.—Called edible in California (Harkness & Moore).

A. socialis, DC., has a good reputation in the Lower Pyrenees, but they eat the head, and not the stalk, which is leathery (Cordier).

A. solitarius, Bull.—Cordier says the flesh is white and of exquisite taste.

A. spadiceus, Cooke.—This doubtful species is used by the smaller ketchup manufacturers in Britain (Cooke).

A. speciosus, Fr.—Enumerated by Curtis as esculent in the United States.

A. spectabilis, Fr.—Esculent, according to Letellier (Cordier).

A. splendens, Pers.—An edible European species (Mueller).

A. squarrosus, Muel.—Enumerated as esculent for the United

States by Curtis, and has been found to be wholesome in Britain (Cooke).

A. strobiliformis, Fr. — Esculent (Berkeley; Cooke). United States (Curtis).

A. subdulcis, Pers.—Edible (Unger).

A. subocreatus, Cooke. — Sent, as is believed, from China to Singapore to be eaten (Cooke).

A. tessulatus, Bull.—Recorded as edible in the United States (Cooke).

A. tigrinus, Bull. (Syn. *Lentinus tigrinus*, Fr.; *A. Dunalii*, DC.)—Said by Cordier to be edible, and of agreeable taste and odor.

A. tortilis, Bull.—Called edible by Unger.

A. translucens, DC.—Called edible by Cordier.

A. ulmarius, Bull.—Found on the elm, the poplar, and the beech. Its taste and smell are agreeable (Badham). Is common not only in Britain, but also in North America, and is by some preferred to *A. ostreatus*. Although perfectly wholesome, there is not much flavor in it (Cooke). Edible; its flesh firm, compact, of an agreeable odor and savor (Cordier).

A. vaginatus, Bull.—Badham says it will be found inferior to but few agarics in flavor. Cordier calls it a delicate food.

A. violaceus, L.—Badham says a handsome fungus and edible.

A. virescens, Schoef. — The flesh is sweet and agreeable to the taste like a hazel nut (Kromb.). Its odor is very agreeable without being penetrating; its flavor is exquisite when cooked (Persoon). Eaten raw the flavor is sweet and pleasant, like a fresh hazel nut (Corda). Syn. *A. bifidus*, Bull.; *Russula eruginosa*, Pers. An exceedingly delicate fungus. It is eaten in Italy, and said to be eaten in France and England (Badham).

A. virgineus, Jacq.—Cordier says of an agreeable taste and feeble odor, eatable. Badham says *A. virgineus*, Wulf, is a small fungus of pleasant taste and disagreeable odor.

A. volemum, Fr.—Very delicious even when eaten raw, and celebrated from early times (Vries).

Boletus.

Boletus edulis, Berk.—This fungus, says Berkeley, is considered by most people an excellent article of food, and has sometimes been cultivated artificially in its native woods. It is a native of Europe, and is catalogued for North Carolina by Dr. Curtis, and for California

by Harkness & Moore. Badham says its tender and juicy flesh, and its delicate and sapid flavor, render it equally acceptable to the plain and the accomplished cook. It may be truly said to improve every dish of which it is a constituent. This is believed, says Cooke, to be the *suillus* eaten by the ancient Romans, who obtained it from Bithynia. This species is common in England, but as a rule does not seem to please the English palate. In Vienna and Hanover, cut into thin slices and dried, it is exposed for sale in every market. In Lorraine it is eaten under the name of Polish mushrooms. In the department of Gironde, in France, great quantities are preserved and sent annually to the Parisian markets, strung on thread and dried, as they are in Russia.

Large quantities of mushrooms are consumed throughout the world, but their general use we give under *Agaricus*. There are many species of *Boletus* which serve or may serve as food, collected in their wild state. In Australia the natives of Swan River Colony eat several species; two of the principal they call *numar* and *woorda*, and the latter Drummond thinks might be advantageously substituted in cultivation for the common mushroom, as it has the same flavor, and is much easier of digestion.

Among edible species are:—

B. œreus, Bull.—In Europe, edible according to Cordier.

B. œstivalis, Fr. (Syn. *Tubiporus œstivalis*, Paulet; *B. cepa*, Thou.)—This, according to Paulet, is among the most fragrant and delicious, as assuredly it is among the largest of the Boletus tribe (Mrs. Hussey). The flesh is firm, of a milky flavor when raw, and it is a more excellent species than *B. edulis*. It occurs in woodland pastures in Europe.

B. aurantiacus, Bull.—Said by Cordier to be edible.

B. badius, Fr.—Called edible by Cordier.

B. bovinus, Fr.—A fungus of heathery fir woods. It occurs in Europe, in the Carolinas (Curtis), and in California (Harkness & Moore). Cooke says the taste and smell is sweetish and agreeable. Krombholz, that it is much sought after in Europe as a dish, and is good when dried.

B. carinthiacus, Jacq.—Classed by Unger as edible.

B. castaneus, Fr.—Eaten in Europe, but Cooke says is of inferior flavor. It has a mild, pleasant taste when raw. Credited by Curtis to the Carolinas.

B. chrysenteron, Fr.—This species is said to afford very poor

eating, and some authors consider it injurious, but persons have been known to have eaten it (Cooke).

B. collinitus, Cooke.—Dr. Curtis of Carolina recognizes it as esculent, and adds that it has been pronounced delicious by some to whom he has sent it.

B. elegans, Fr. (Syn. *B. luteus*, Kromb.; *B. flavus*, Bolton, With., Fr.; *B. Grevillei*, Grev., Berk.)—Mrs. Hussey says the taste is pleasant. Corda calls it "excellent diet." Cordier says edible, but not delicate, the yellow flesh having feeble savor and fungus odor. Badham remarks that he has eaten it. Curtis catalogues it for North Carolina. It also occurs in California.

B. flavidus, Fr.—Stated to be edible by Curtis, of North Carolina.

B. fragrans, Vitt.—Found in woods under oaks. Cooke pronounces it esculent.

B. granulatus, L.—Eaten on the continent of Europe (Cooke), and has been eaten by Curtis in North Carolina.

B. hepaticus, DC.—Said by Unger to be edible.

B. impolitus, Fr.—Called esculent by Cooke.

B. kuruma, Sieb., of Japan, is called *kuruma* by the Ainos, and is edible. Siebold enumerates it as growing on *Quercus beroni* at Yeso.

B. lecuomelas, Fr.—Called edible by Curtis, in North Carolina.

B. luridus, Berk.—A suspicious species, but it has been known to have been eaten with impunity. Cooke says he should be sorry to repeat the experiment.

B. moschocaryanus, Rumph.—Eaten as a delicacy on the Bunda Islands (Unger).

B. Obsonium, Paul., a mushroom found in the woods in the South of France, is a good food (Cordier).

B. ovinus, Sch.—Called edible by Curtis of North Carolina.

B. Romano, Ottav.—Eaten in Rome (Badham).

B. sayuarius, Rumph.—Eaten on the Bunda Islands as a delicacy (Unger).

B. scaber, Fr.—Common in Britain and on the continent of Europe. It presents two forms. The odor is slight, the taste subacid. It has an agreeable flavor when cooked. When dried it loses all odor, and is then insipid and unfit for food (Badham). A fresh specimen, says Mrs. Hussey, selected before the tubes

have changed color, will be found very agreeable boiled. Is eaten in France when young, says Cordier. Much inferior to *B. edulis*, says Cooke. Eaten by Curtis in North Carolina. Is found also in California.

B. subtomentosus, Fr.—Said to be very poor eating, and some authors have considered it injurious. Cordier says it is edible; Trattinneck, that it is eaten in Germany. Curtis catalogues it as edible in North Carolina.

B. versipellis, Fr. — Classed as edible by Curtis for North Carolina, and by Harkness & Moore for California.

Bovista.

More then one species of this fungus appear in the bazaars of India, as at Secunderabad and Rangoon (Cooke), and one species is commonly sold in the bazaars of the Deccan and Burma (Berkeley). They are commonly known as *puff-balls*, and are common in our fields, pastures, and woods.

Bovista nigrescens, Fr. — Said by Berkeley to be eatable when young, but apt to have an unpleasant taste when old. Cooke says it is eaten in the United States.

B. plumbea, Fr.—Easily known by its leaden hue when dry. Cooke says it is eaten in the United States, and is stated to furnish a very palatable dish. Cordier gives as synonyms, *Lycoperdon plumbeum*, Vitt., and L. *ardosiacum*, Bull., and says it is edible.

Clavaria.

Many of this genus of fungi afford excellent articles of food, but they are not much used in England, probably from the scarceness of the larger species (Berkeley). In the United States a large number are catalogued by Curtis as edible.

Clavaria amethystina, Bull., on the continent of Europe is preferred by some to all the other species, and is said to possess a very fine flavor (Cooke). Badham says simply, an edible fungus. Cordier says edible, and of a fine taste.

C. aurea, Schaeff.—Said by Cordier to be excellent eating. It is enumerated by Curtis as edible in the United States.

C. botrytis, Pers. — Edible and in common use in Carinthia according to Cordier. Cooke says common in the Vosges. Curtis mentions it as edible in the United States.

C. cinerea, Bull. — Called in France *pied de coq*, *gallinole*, etc. In Italy *ditola rosea*, and in both these countries it is eaten (Cooke). Badham calls it an esculent species. Cordier says eatable, but injurious if eaten in quantity.

C. coralloides, L. (Syn. *C. alba*, Pers.)—Said by Cordier to be edible. Cooke says much esteemed in Germany, Italy, Switzerland, etc. Badham says of most excellent edible quality.

C. crispa, Jacq. (Syn. *Sparassis crispa*, Fr.)—Said by Cordier to be eaten in Alsace.—Said by Cooke to be very large, resembling in size, and somewhat in appearance, a cauliflower. In Austria it is fricasseed with butter and herbs, and is excellent eating. Catalogued by Curtis as edible in the United States.

C. cristata, Pers.—Catalogued as edible in the United States by Curtis, and by Harkness & Moore.

C. fastigiata, L. (Syn. *C. pratensis*, Pers.)—Called edible by Cordier. Is also mentioned for California by Harkness & Moore. In Germany it is eaten under the name of *ziegenbart* (goat's beard), according to Roques. *C. fastigiata*, DC., is found in the Carolinas, and is called edible by Curtis.

C. flava, Pers. (Syn. *C. coralloides*, Bull.)—Said by Cordier to be excellent to eat, and much sought for in Germany. Curtis says edible in the United States, and Harkness & Moore class *C. flava*, Schaeff., as edible in California.

C. formosa, Pers.—Cordier says its white flesh is edible, and of a delicate taste. It is catalogued as edible for the United States by Curtis.

C. (*Sparassis*) *laminosa*, Fr.—Said by Cordier to be edible and of excellent taste. Is listed by Curtis as edible in the United States.

C. macropus, Curt.—Edible in the United States (Curtis).

C. muscoides, Curt., of the United States, edible (Curtis).

C. pistillaris, L. — Eaten in Poland, Russia, and Germany (Cordier).

C. pyxidata, Curtis.—Edible in the United States (Curtis).

C. rubella, Schaeff.—Edible, according to Unger.

C. rufescens, Berk. — Sold in Hanover, where it is esteemed (Berkeley).

C. rugosa, Bull.—A common British species, also found in the United States. Edible (Cooke). Badham says an esculent species. It is however too small to repay collecting.

C. stricta, Pers.—Edible, as Unger states.

C. subtilis, Curt.—Edible in the United States (Curtis).

C. tetragona, Curt.—Edible, according to Curtis, in the United States.

C. uliginea, Curt.—Edible in the United States (Curtis).

C. vermicularis, Berk. — Said by Berkeley to be extremely delicate when dressed.

C. vermiculata, Scop.—Called edible by Cordier.

Craterellus.

Craterellus clavatus, Fr. (Syn. *Gomphus truncatus*, Pers.)—A fungus classed by Cordier as edible.

C. cornucopioides, Pers. (Syn. *Peziza cornucopioides*, L.)—Stated by Cordier to be edible.

Cyttaria.

Cyttaria Berteroi, Berk.—Was seen by Darwin in Chili, and is eaten occasionally, but apparently not so good as *C. Darwinii* (Cooke).

C. Darwinii, Berk.—A globular bright yellow fungus of Terra del Fuego, found growing in vast numbers on the birch trees, and in its tough and mature state collected by the women and children to be eaten uncooked. It has a mucilaginous, slightly sweet taste, with a faint smell like that of mushrooms. With the exception of a few berries, chiefly of a dwarf arbutus, the natives eat no vegetable food besides this fungus (Darwin).

C. Gunnii, Berk.—Abounds in Tasmania, and is held in repute amongst the settlers for its esculent properties (Cooke).

Helvella.

Some few species of this genus of fungi are recorded as eaten.

Helvella Californica, H. & M.—Catalogued for California as edible by Harkness & Moore.

H. crispa, Fr. (Syn. *H. leucophæa*, Pers.; *H. Mitra*, Bull.)—Said by Cordier to be edible. Berkeley says esculent, and when well stewed forming an acceptable dish. Cooke says equal to the morel in taste. Badham says of an agreeable odor, and of a general resemblance to the morel in taste. Occurs in California, according to Harkness & Moore, and edible.

H. elastica, Bull. — Called edible by Unger. Cordier says esculent, but of too small a size to be much sought after.

H. esculenta, Pers. (Syn. *Gyromitra esculenta*, Fr.)—Said by Badham to be esculent, and of agreeable odor. Berkeley says it is much eaten on the continent, but in some conditions appears to be dangerous. Harkness & Moore catalogue it as edible in California.

H. gelatinosa, Bull. (Syn. *Leotia lubrica*, Pers.)—Said by Cordier to be eatable, but of small size.

H. grandis, Cumino.—Eaten in France (Cordier).

H. infula, Fr.—A large species, not British, but extends to North America. Edible (Cooke).

H. lacunosa, Afz.—Cordier says eaten in Provence and in Piedmont. Berkeley says when well stewed an acceptable dish. Badham classes it as inferior to *H. crispa*, but esculent. Cooke says an excellent substitute for the morel, and occurs in Carolina.

H. Monachella, Fr.—Called edible by Unger.

H. ramosa, Schaeff.—Classed as edible by Unger.

H. sulcata, Afz. (Syn. *Gyromitra esculenta*, Fr.) — Said by Cooke to be rarely found in Britain, but more common on the continent, where it is held in esteem.

Hydnum.

The species furnish, says Unger, only an unpalatable nutriment. Quite a large number are, however, mentioned as edible, and some are greatly praised by experts.

Hydnum Auriscalpium, L.—One of the most elegant fungi of Britain, not uncommon on fir cones (Berkeley). Cordier says it is eaten in Gascony and Tuscany, but is a food little worthy of being sought for.

H. caput-Medusæ, Bull.—Occurs on trunks of trees. It is common in Italy, and in parts of Austria, where it is reckoned among the edible species (Cooke). Cordier says frequently eaten in Italy, and of agreeable odor and savor. It occurs in the United States (Cooke).

H. coralloides, Scop.—Occurs on decayed forest trees. Cordier gives as a synonym, *H. ramosum*, Bull., and calls it a delicate food. It occurs in Germany, Switzerland, and France, and is esteemed esculent (Cooke). In California it grows on oaks, and

looks like a large white mass of coral, and when young may be safely eaten (Moore).

H. Erinaceum, Bull.—Eaten in Germany and France (Cooke).

H. imbricatum, L. (Syn. *H. cervinum*, Pers.)—Called edible by Cordier. Mueller says it is a wholesome mushroom of delicious taste. Cooke says it is eaten in Germany, Austria, Switzerland, France, and elsewhere. It occurs on the ground in pine woods in Carolina, and is esculent.

H. infundibulum, Swartz. (Syn. *H. fusipes*, Pers.)—Classed as edible by Cordier.

H. lævigatum, Swartz. — Eaten in Alpine districts (Cooke). It is called edible in the United States by Curtis.

H. repandum, L.—Affords, says Berkeley, an excellent article of food if carefully dressed, and is scarcely exceeded in delicacy by any fungus. The general use made of this fungus throughout France, Italy, and Germany, leaves no doubt, says Roques, of its good qualities. Known in France as *eurchon*, *rignoche*, and *arresteron*. In the Vosges as *barbe de vache* and *pied de mouton*. The flesh is firm and white, rather hot to the taste when raw, but mild when cooked (Cooke). The smell like that of horseradish (Badham). Cordier says edible, and in common use in France. Occurs in California, and Moore says that stewed slowly it is excellent.

H. rufescens, Schaeff.—Called edible by Cordier. Mentioned by Curtis as one of the edible species of the United States.

H. subsquamosum, Batsch. (Syn. *H. badium*, Pers., *H. squamosum*, Bull.)—Called edible by Cordier. Mentioned, also, as edible, by Curtis, in the United States.

H. violaceus, Alb. et Schw.—Said by Cordier to be edible, yet little sought for food, notwithstanding its taste and agreeable odor.

Hygrophorus.

Few, if any, says Berkeley, are admitted to English kitchens, though no doubt some are wholesome.

Hygrophorus chrysodon, Curtis. — Enumerated for the United States as esculent by Curtis.

H. niveus, Fr.—Common in mossy pastures in England. When found large enough, may be eaten, says Cooke.

H. pratensis, Fr. — Perfectly wholesome, and is sometimes eaten in France, Germany, Bohemia, and Denmark (Cooke). It

is included among the esculent species of the United States by Curtis.

H. virgineus, Fr., though small, is well worth the trouble of collecting. Except that it is occasionally eaten in France, it does not enjoy much reputation abroad (Cooke).

Lactarius.

The species of this genus are often exceedingly acrid and dangerous, yet this class of fungi seem to be eaten almost indiscriminately in Russia, when preserved in vinegar and salt, in which condition they form an important item in the kinds of food allowed in their long fasts. One or two species have been found in the Himalayas, but Europe and North America appear to be their principal habitat.

Lactarius angustissimus, Lasch.—Esculent in the United States, according to Curtis.

L. deliciosus, Fr. — Found in the markets of Paris, Berlin, Prague, and Vienna, and is esteemed in nearly all the countries of Europe (Cooke). *L. deliciosus*, L., is credited as esculent in California by Harkness & Moore.

L. insularis, Fr.—Esculent in the United States, according to Curtis and Harkness & Moore. It is not reputed edible in Britain (Cooke).

L. piperatus, Fr.—Classed in England with dangerous, sometimes poisonous, species; but Curtis says it is cooked and eaten in the United States. Harkness & Moore list it as edible in California.

L. subdulcis, Fr.—Esculent in the United States, according to Curtis, but not reported as edible in Britain (Cooke).

L. volemus, Fr. — An esculent species, celebrated from early times, and is said to resemble lamb's kidney. Berkeley says it is mild, and forms an excellent article of food. Called esculent in South Carolina by Curtis, and in California by Harkness & Moore.

Lycoperdon.

The species are produced abundantly in almost every country, but are so variable that it is often very difficult to distinguish them (Berkeley). Badham says all those more or less spherical white funguses with a membranaceous covering, and filled when young with a white, compact, homogeneous pulp, which we call *puff-balls*,

are good to eat, and are to be compared to sweetbreads for the rich delicacy of their unassisted flavor. More than one species appear in the bazaars of India, as at Secunderabad and Rangoon (Cooke).

Lycoperdon ardosiacum, Bull. (Syn. *Bovista plumbea*, Pers.)—Given by Cordier as edible.

L. Bovista, L.—Badham says no fungus requires to be eaten so soon after gathering as this; a few hours will destroy the compactness of the flesh, and change the color. Berkeley says that when quite young, it is one of the best of fungi, if cut in slices and fried.

L. giganteum, Fr.—This puff-ball is, when well manipulated, an excellent addition to the breakfast table. It is especially esteemed in Italy (Cooke). *L. giganteum*, Batsch, is classed among the edible fungi of California by Harkness & Moore.

Marasmius.

Marasmius oreades, Fr., the Fairy-ring champignon, enjoys, says Cooke, a good reputation, but local. Though small, it is one of the most delicious of edible fungi (Cooke). Berkeley says one of our very best edible fungi. It is pronounced esculent by Curtis in Carolina, and in California by Harkness & Moore.

M. scorodonius, Fr. — Consumed in Germany, Austria, and other countries of the continent of Europe, where, perhaps, its garlic odor has been one of its recommendations as an ingredient in sauces. It is called, in Germany, *lauchschwamme* and *hagyma gomba* (Cooke). It is enumerated for South Carolina by Curtis.

Morchella.

The morels occur in various parts of the world, but the greater part of those used in Britain come from Germany. In Cashmere a large quantity is collected. They are much used by cooks to flavor gravies, and dressed in various ways make an excellent dish.

Morchella bohemica. Kromb.—Eaten in Bohemia (Cooke).

M. Caroliniana, Bosc., of the Southern United States, is edible (Cooke).

M. conica, Pers. — Eaten, according to Unger. It occurs in California (Harkness & Moore).

M. costata, Pers. — Less esteemed than the edible morel, but alimentary, and found in Italy (Cordier).

M. crassipes, Pers., the gigantic morel, is esculent (Cooke).

M. deliciosa, Fr.—Eaten in Java, and in Cashmere (Cooke).

M. esculenta, Pers.—The common morel. Every one knows the morel, says Badham, that expensive luxury which the rich are content to procure at great cost from the Italian warehouses, and the poor are fain to do without. It is held in very high estimation in Britain, says M'Intosh, but is little cared for in the Roman markets. Berkeley says the greater part of the English supply comes from Germany. It is found, according to Curtis, in South Carolina; and in California, according to Harkness & Moore.

M. gigaspora, Cooke.—Eaten in Cashmere (Cooke).

M. rimosipes, DC.—Occurs in France and Bohemia, and is esculent (Cooke).

M. semi-libera, DC. — Esteemed in France, Italy, Germany, England, etc., says Cooke. Badham says it is much less sapid than the morel, but esculent. Berkeley says it has a bad reputation, and requires some caution in its use.

Mylitta.

In the Neilgherries, South India, a substance is occasionally found which is allied to the "native bread" of southern latitudes. It is found at an elevation of 5,000 feet. The natives call it "a little man's bread," in allusion to the tradition that the Neilgherries were once peopled by a race of dwarfs. It is an underground fungus, of the genus Mylitta. Mr. Scott says it seems very closely allied to, if really distinct from, the so called native bread of Tasmania (Cooke).

Mylitta australis, Berk., the native bread of Australia, is a large, subglobose fungus, sometimes many inches in diameter, with a black skin which chips off in little fragments, enclosing a veined white mass which at first is soft, and has a peculiar acid smell, but when dry becomes extremely hard and horny. It is eaten by the natives (Berkeley).

Pachyma.

Pachyma Cocos Fr. (Syn. *Lycoperdon solidum*, Gron.)—The Tuckahoe. This curious production, although often included with fungi, is not a fungus, as is proved by the examinations made by Berkeley. It is eaten in the United States, and, as it consists almost entirely of pectic acid, it is sometimes used for making jelly (Cooke). It is a large, hard-crusted fungus, says Pickering, growing underground in sandy pine barrens along the alluvial

Atlantic border of North America. It was eaten from early times by the Seminoles. It is mentioned by Fontaneda: the *okeepenauk*, a round root as large as a man's head found by Hariot, eaten raw by the natives on the Roanoke, may also be compared. The *tockowhough*, of the natives on James River, is enumerated by Strachey, and described by Schweinitz as observed by him in Carolina, and is known to grow as far North as 40° in peninsular New Jersey.

Sprigley, in 1669, mentions it in Virginia as eaten by the natives, under the name of *tuckaho*, and of late years it is mentioned as occurring in Kansas and Arkansas. Hanbury says it is called *Fuh-ling* in China, and made into edible cakes which are frequently sold in the streets.

P. Hoeln, Fr.—A truffle which Mueller says occurs in China, particularly in the province of Sonchong, and its flavor is most agreeable.

Paxillus.

Paxillus giganteus, Fr.—Catalogued as edible in California by Harkness & Moore.

P. involutus, Fr., though very common in Europe, is not eaten, yet it is included by Dr. Curtis with the esculent species of the United States (Cooke).

Peziza.

Peziza Acetabulum, L. — Said by Badham to be an utterly insipid fungus, depending entirely for flavor upon the sauce in which it is served. It is called esculent by Cordier and Cooke, and is found in Carolina.

P. aurantia, Œd. (Syn. *P. coccinea*, Bull.)—Classed as eatable by Cordier.

P. badia, Pers.—Called eatable by Cordier.

P. cochleata, L. — Eaten in the north of France (Cordier). *P. cochleata*, Huds., is gathered in Northamptonshire, England, as a substitute for morels (Cooke).

P. leporina, Batsch.—Eaten in France (Cordier).

P. macropus, Pers. (Syn. *P. stipata*, Bull.)—Eaten by the poor in France (Cordier).

P. onotica, Pers., a species of remarkable beauty, is eatable (Cordier).

P. venosa, Pers.—Has a nitrous odor and fungoid flavor, but is edible (Cooke).

P. vesiculosa, Bull.—Edible. Its savor is feeble and agreeable (Cordier).

Phallus.

Phallus mokersin, Berk.—In China the volva is eaten (Berkeley).

Polyporus.

The species vary much in point of substance, a few being so soft as to be esculent, and others hard and woody or corky.

Polyporus Berkeleii. Fr. — Intensely pungent when raw, but when young and before the pores are visible, it may be eaten with safety, all its pungency being dissipated by cooking. It occurs in the United States (Cooke).

P. confluens, Fr. (Syn. *P. artemidorus*, Lenz.)—Eaten about Nice. Its flesh, says Cordier, is pale; its savor a little sharp. In the United States Dr. Curtis considers it superior eating.

P. corylinus, Mauri.—Grows upon the old trunk of the cob-nut tree. It is excellent for food, and is cultivated artificially, the corylus logs being sold in the Roman markets, and then being watered and put by in a cellar (Badham).

P. cristatus, Fr. — Enumerated by Curtis as edible in the United States.

P. frondosus, Schrank. — Recommended highly as food by Paulet. The people of the Vosges eat it, and it is sold in the Roman markets. Vittadini has not included it among the esculent fungi in his work, and Persoon does not recommend it on account of its toughness.

P. fuligineus, Fr. (Syn. *Boletus polyporus*, Bull.)—Called edible by Cordier.

P. giganteus, Fr.—Very large and leathery when old, esculent when young. On the continent of Europe its esculent qualities are known and appreciated (Cooke). Occurs also in Carolina, and termed esculent by Curtis.

P. intybaceus, Fr. (Syn. *P. frondosus*, Berk.)—No fungus, says Mrs. Hussey, is more esteemed as an article of food than this. Eaten raw, the taste is very agreeable, but it leaves a slight astringency upon the palate. Cooke says it sometimes attains the weight of forty pounds, and is esculent when young and all agree that it is excellent.

P. leucomelas, Curt.—In the United States called edible by Curtis.

P. ovinus. Berk.—Said by Berkeley to afford a grateful food. It is enumerated by Curtis as esculent in the United States.

P. poripes. Fr.—When raw, tastes like the best chestnut or filbert, but is rather too dry when cooked, says Curtis. Is found in the United States.

P. squamosus. Fr.—The edible qualities cannot be declared first rate. Mrs. Hussey says one might as well think of eating saddle-flaps. Young specimens, before they have acquired the leathery consistency, would serve for an occasional meal. In this stage they are prepared for the table in some parts of Europe (Cooke).

P. sulfureus. Fr. (Syn. *P. citrinus*, Pers.)—Collected in the environs of Nice and served as a food, but its quality is inferior (Cordier). In the United States Dr. Curtis considers its eating just tolerably safe, but not to be coveted.

P. tuberaster. Pers.—Confined to Naples, and is procured by watering the *pietra funghaia*, or fungus stone, a kind of tufa, in which the mycelium is imbedded (Cooke). It is cut into slices, boiled several times in milk, then beaten out with a flat board and fried in oil (Persoon).

P. umbellatus. Fr.—Stated by Fries to be esculent. Cordier says it is employed as food in Germany and in Sweden.

Polysaccum.

A species of puff-ball which inhabit sandy tracts in warm countries.

Polysaccum crassipes. DC. (Syn. *Scleroderma tinctorium*. Pers.)—Said by Cordier to be eaten in Italy.

Russula.

Some of this species of fungus are extremely acrid, while others are mild and esculent. They are much esteemed on the continent of Europe, though seldom used in England.

Russula adusta. Fr.—Catalogued as edible in the Carolinas and in California (Curtis; Harkness & Moore).

R. alutacea, Fr.—Said by Cooke to be by no means despised as a food, although Badham has placed it amongst species to be

avoided. It is marked as esculent in the Carolinas by Curtis, and in California by Harkness & Moore.

R. decolorans, Fr.—Said to be esculent by Cooke.

R. heterophylla, Fr. — Common in woods. Vittadini pronounces it unsurpassed for fineness of flavor. Roques gives also an account in its favor as consumed in France. Harkness & Moore mention it as edible in California.

R. lactea, Fr.—Cooke says found in the United States and esculent.

R. ochroleuca, Curtis.—Edible in the United States (Curtis).

R. vesca, Fr.—Pronounced esculent by Cooke.

R. virescens, Pers.—In France this species is said to be preferred by some to the ordinary mushroom, and is known in the south by the name of *verdette*. It is common in Languedoc, where it is collected (Cooke). Vittadini and Rogers speak well of it, and the peasants of Milan toast it over embers, and eat it with a little salt.

Tremella.

Tremella foliacea, Curtis.—Catalogued as edible in Carolina by Dr. Curtis.

T. mesenterica, Pers. — Said by Cordier to be eaten in Germany as a morel. It is catalogued by Curtis as edible in the United States, and *T. mesenterica*, Retz, is given by Harkness & Moore as edible in California.

Tuber.

In the market of Apt, France, alone, about 3,500 lbs. of truffles are exposed for sale every week during the height of the season, and the quantity sold during the winter reaches upwards of 60,000 lbs., whilst the department of Vaucluse yields annually upwards of 60,000 lbs. (Cooke). In England truffles are sought for almost exclusively by dogs of a particular breed; but on the continent of Europe sows are used for the same purpose, and they are raked up by persons who have a peculiar knack in recognizing the spots where they are likely to grow. In Poitou it is a common practice to enclose a space upon the downs, sowing it with acorns, and when the oaks attain size enough to shade the ground, there is sure to be a crop of truffles. In the South of France truffles have

been procured in woods by watering the ground, previously prepared, with water in which the parings had been steeped (Berkeley).

Tuber æstivum, Vitt. — The truffle most commonly collected in Britain (Cooke). Cordier says it is *T. albidum*, Caesalp., and is less delicate in taste than the *T. cibarium* and *T. brumale*.

T. albidum Fr.—Occurs with *T. æstivum*, but is smaller and less agreeable in taste, according to Mueller.

T. album, Bull.—Said by Unger to be edible.

T. brumale, Mich.—The Winter truffle. Esculent (Cooke).

T. cibarium, Sibth.—The Common truffle, or Black truffle of middle and South Europe. When full grown it rarely exceeds the size of a large walnut. It grows from two to ten inches under the ground (M'Intosh). The European names for the truffle are, in French *truffe;* in German *truffel;* in Dutch *aardnoot;* in Italian *tartufo nero*. It seems to have been the *udnon* of Dioscorides.

T. leonis, in Algeria occupies, says Figuier, the place of all the truffles of Western Europe.

T. magnatum, Pico. (Syn. *T. griseum*, Pers.)—Cordier describes this species as delicate and very fine. Cooke says, a truffle eaten in France. Mueller says the Grey truffle is one of the most esteemed. Thompson calls it the Piedmontese truffle, the most celebrated variety, occurring abundantly in the mountains of Piedmont, and sold at an enormous price.

T. melanospermum, Vitt. (Of France, Germany, and Italy.)—Thompson says it is the truffle of the Paris markets, is richly scented, and also greatly superior in flavor to the common sort.

T. mesentericum, Vitt. (Syn. *T. cibarium*, Corda.) — Said by Cordier to have a strong odor and savor, and to be edible, but little sought for.

T. moschatus, Bull. (Syn. *Melanogaster variegatus*, Tul.)—Used in the west of England as a substitute for truffles, under the name of Red truffle. It has, however, none of the delicate aroma of the real truffle (Berkeley). Cordier says it is edible, but not delicate. Harkness & Moore catalogue it as an edible fungus of California.

T. niveum, Desf. (Syn. *Terfezia Leonis*, Tul.) — Not equal, says Berkeley, to the *T. æstivum*, though it has of late attracted notice in Algiers from its abundance. Cordier says, eaten by the Arabs. Cooke, that it is used as an esculent in Damascus.

T. rufum, Pico. — Called by Mueller the Red truffle. Common, especially in vineyards, and much used for food.

Verpa.

Verpa digitaliformis, Pers.—Vittadini states that it is sold in the Italian market, although only to be recommended when no other esculent fungus offers, which is sometimes the case in spring. Badham says this fungus is not to be despised as food when we cannot get better, nor to be eaten when we can.

DATE OF FLOWERING OF TREES AND SHRUBS, IN EASTERN MASSACHUSETTS, 1881.

BY JOHN ROBINSON, PROFESSOR OF BOTANY AND VEGETABLE PHYSIOLOGY TO THE SOCIETY, SALEM, MASS.

April 14, Corylus Avellana.
16, Corylus Americana.
19, Epigæa repens (for sale on Boston streets).
Alnus glutinosa.
Alnus incana.
25, Salix Smithiana.
Salix ferruginea.
Salix caprea.
Salix acuminata.
Salix discolor.
Salix Forbesiana.
Salix supularis.
Salix "Kilmarnock."
Dirca palustris.
Taxus baccata, *var.* Canadensis.
Erica carnea.
Thuja occidentalis.
Rhododendron Dahuricum.

April 25, Rhododendron chrysanthum.
Larix Europæa.
Ulmus Americana.
Populus alba.
27, Salix viminalis.
Cornus mascula.
Shepherdia argentea.
28, Populus balsamea, *var.* candicans.
Populus tremula.
May 1, Populus tremuloides.
3, Salix humilis.
4, Magnolia conspicua.
Forsythia viridissima.
Forsythia Fortunei.
Ulmus montana.
5, Ulmus campestris.
Acer platanoides.
Andromeda Japonica.
Forsythia suspensa
Larix leptolæpis.
Laurus Benzoin.
6, Populus grandidentata.
Populus dilatata.
7, Salix livida, *var.* occidentalis.
Cassandra calyculata.
Myrica Gale.
8, Salix tristis.
Salix alba.
Salix fragilis.
Larix Americana.
Ribes rubrum.
9, Prunus triloba.
Magnolia Soulangeana.
Amelanchier Canadensis.
Chamæcyparis (Retinospora) obtusa.
10, Acer saccharinum.
Lonicera cærulea.
Lonicera ciliata.
Salix candida.
Prunus domestica.

May 10, Buxus sempervirens.
Berberis repens.
Lonicera ciliata.
Andromeda floribunda.
11, Ribes aureum.
Ribes cereum.
Ostrya Virginica.
Spiræa Thunbergii.
Salix tenuifolia.
Salix cordata.
Salix triandra.
Salix purpurea.
Salix Andersoniana.
Negundo aceroides.
Betula lutea.
Thuja occidentalis.
Abies balsamea.
Amelanchier Canadensis, *var.* oblongifolia.
Fraxinus Americana.
Fraxinus excelsior.
Fraxinus pubescens.
Nemopanthes Canadensis.
Rhamnus alnifolia.
Prunus Pennsylvanica.
14, Fagus sylvatica.
Betula lenta.
Cercis Japonica.
Prunus Americana.
Berberis Aquifolium.
Vaccinium Pennsylvanicum.
Picea alba.
15, Daphne cneorum.
Rhododendron (Cunningham's White).
Pirus (Malus) floribunda.
Acer Pseudo-Platanus.
Quercus coccinea.
Rhododendron Rhodora.
Quercus rubra.
Pirus Malus.
Andromeda polifolia.

May 15, Prunus Persica.
Prunus domestica.
Prunus Armeniaca.
16, Ledum palustre.
Ledum latifolium.
Ledum thymifolium.
Lonicera cærulea.
Prunus Cerasus (Double, White and Pink).
Acer cissifolium.
Syringa vulgaris.
Rubus deliciosus.
Rhodotypos kerrioides.
Kerria Japonica.
Sambucus pubens.
Spiræa prunifolia.
Spiræa callosa.
Æsculus glabra.
Cercis Canadensis.
Prunus domestica (Double Plum).
17, Celastrus Orixa.
Acer Pennsylvanicum.
Cornus florida (bracts opening).
Cratægus coccinea.
Ribes × Gordoni.
Prunus Hallii.
Hydrangea Japonica.
Celtis Audibertiana.
Ribes palmatum.
Abies Nordmanniana.
19, Picea excelsa.
22, Æsculus Hippocastanum.
Prunus (Weeping Cherry).
Wistaria Sinensis.
Juglans cinerea.
Quercus tinctoria.
Pinus sylvestris.
Picea Cephalonica.
Picea nigra.
Abies Alcoquiana.
Pinus Banksiana.

May 22, Pirus baccata.
Pirus arbutifolia.
Pirus Toringo.
Rhododendron nudiflorum.
Staphylea Bumalda.
Staphylea trifoliata.
Spiræa oblongifolia.
Spiræa crenata.
Spiræa lævigata.
Spiræa chamædrifolia (S. confusa of gardens).
Spiræa obovata, *var.* hypericifolia.
Amelanchier vulgaris.
Quercus Daimio.
Quercus dentata.
Prunus maritima.
Prunus pumila.
Euonymus alatus.
Ribes Grossularia, *var.* Uva-crispa.
Ribes sanguineum.
Ribes floridum.
Ribes prostratum.
Forestiera acuminata.
Syringa Persica.
Syringa vulgaris, *var.* major.
Caragana arborescens.
Prunus nana (Double Almond).
Prunus Persica (Double Peach).
Cratægus coccinea.
Hippophae rhamnoides.
Lonicera Tartarica.
Berberis Thunbergii.
Vaccinium corymbosum.
Betula alba, *var.* pubescens.
Betula alba, *var.* Dalecarlica.
Betula fruticosa, *var.* Gmelini.
Ribes saxatile.
Ribes multiflorum.
Celtis occidentalis, *var.* crassifolia.
Celtis Tournefortii.
24, Ribes rotundifolium.

May 24, Ribes nigrum.
Ribes Cynosbati.
Akebia quinata.
Pterocarya fraxinifolia.
Carpinus Duanensis.
Æsculus flava.
25, Platanus occidentalis.
28, Magnolia acuminata.
Magnolia cordata.
Magnolia Fraseri.
Buckleya distichophylla.
Leiophyllum buxifolium.
June 1, Syringa Persica, *var.* laciniata.
Jamesia Americana.
Pinus rigida.
Berberis vulgaris.
Acer Tartaricum, *var.* Ginnala.
Carya alba.
Carya porcina.
Juglans nigra.
Rhododendron calendulaceum.
Cratægus Oxycantha (Single and Double, Red and White.)
Spiræa trilobata.
Magnolia Umbrella.
2, Viburnum Opulus.
Rhododendron ponticum.
Rhododendron (Azalea) mollis.
Rhododendron (garden varieties.)
Viburnum lantanoides.
Xanthoceras sorbifolia.
Picea pungens.
Laburnum vulgare.
Quercus alba.
7, Quercus glabra.
Rosa alpina.
Rosa alpina, *var.* glandulosa.
Rosa spinosissima.
Rosa montana.
Vaccinium ovatum.

June 7, Lonicera spinosa.
Menziesia ferruginea.
Rubus cratægifolius.
11, Philadelphus coronarius.
Robinia Pseudacacia.
Nevieusia Alabamensis.
13, Juglans Sieboldii.
Neillia Mantsurica.
Berberis Sinensis.
Berberis emarginata.
Berberis Canadensis.
Euonymus pulchellus.
Euonymus Europæus.
Rosa rugosa.
Lonicera involucrata.
Lonicera oblongifolia.
Viburnum plicatum.
Viburnum pubescens.
Viburnum Lentago.
Cornus circinata.
Cornus stolonifera.
Andromeda ligustrina.
Andromeda Catesbæi.
Elæagnus umbellatus.
Cornus alternifolia.
Cratægus Crus-galli.
Liriodendron tulipifera.
15, Chionanthus Virginica.
Spiræa callosa, *var.* Indica.
Philadelphus coronarius, *var.* Shrenkii.
Philadelphus coronarius, *var.* ledifolius.
Rosa blanda, *var.* cropularia.
Rosa acicularis.
Clematis Mandshurica.
Potentilla Salesovii.
Vinitoxicum (from Japan.)
Syringa Josikæa.
16, Pinus Cembra.
Philadelphus inodorus.
Euonymus alatus.

June 18, Clematis coccinea.
Acer Tartaricum.
Ptelea trifoliata.
Acer spicatum.
Cratægus parviflora.
Rosa multiflora.
Vaccinium stamineum.
19, Rhus Toxicodendron.
Kalmia angustifolia.
Philadelphus hirsutus.
Celastrus umbellatus.
Elæagnus parviflora.
Gymnocladus Canadensis.
Rhus cotinus.
Rhododendron brachycarpum.
Styrax Japonica.
Magnolia, *var.* Thompsoni.
Philadelphus coronarius, *var.* variegatus.
20, Cladrastis tinctoria.
Vitis æstivalis.
Syringa Amurensis.
Vaccinium erythrocarpum.
Menziesia globularis.
Lonicera hirsuta.
Lonicera flava.
Lonicera caprifolium.
Viburnum dentatum.
Cornus alba.
Cornus paniculata.
Neillia opulifolia.
Tamarix Gallica.
Viburnum acerifolium.
22, Menziesia polifolia.
Kalmia angustifolia, *var.* rubra.
Gaylussacia dumosa.
Cocculus Japonica.
Tamarix tetrandra.
Vitis Labrusca.
Gaultheria Shallon.
Colutea haleppica.

June 22, Rosa canina.
Celastrus punctatus.
Rosa alba.
Rosa rubifolia.
Rosa Pugetii.
Aralia pentaphylla.
Euonymus Americanus.
Rosa mollissima.
Rubus villosus, *var.* flore-pleno.
Rosa Beggariana (of gardens).
Andromeda mariana.
Erica tetralix.
Phellodendron Amurense.
27, Magnolia glauca.
Philadelphus grandiflorus.
Sambucus Canadensis, *vars.* aurea, variegata, and laciniata.
Gleditschia triacanthos.
Deutzia crenata (single and double).
28, Actinidia polygama.
29, Viburnum nudum.
30, Rhododendron maximum.
Andromeda pulverulenta.
Cytisus nigricans.
Cytisus capitatus.
Ligustrum vulgare.
Lonicera sempervirens.
Rosa rubiginosa.
July 2, Sambucus Canadensis (type).
Tilia Europæa.
Itea Virginica.
Rubus frondosus, *var.* laciniatus.
Euonymus atropurpureus.
Ceanothus Americanus.
Lonicera Japonica (Hallii).
Halimodendron Japonicum.
4, Rhus typhina.
Lonicera brachypoda.
Rubus thyrsiflorus.
Rubus cordifolius.

July 6, Castanea vulgaris, *var.* Americana.
10, Rhododendron viscosum.
Spiræa salicifolia.
11, Cladrastis Amurensis.
15, Cornus sericea.
Rosa setigera.
Clematis crispa.
Sambucus Ebulus.
Spiræa Douglasii.
Spiræa ariæfolia.
Spiræa callosa, *var.* alba (second flowering).
Clematis angustifolia.
Catalpa Kæmpferi.
Hydrangea arborescens.
Hydrangea radiata.
Castanea pumila.
Fallugia paradoxa.
Rubus phænicolasius.
16, Catalpa bignonioides.
22, Tilia Americana.
Rhus glabra.
Rhus glabra, *var.* laciniata.
Wistaria Sinensis (second flowering).
Tecoma radicans.
25, Kœlreuteria paniculata.
Pavia macrostachya.
29, Tamarix Chinensis.
Hypericum Kalmianum.
Buddleia curvifolia.
Spiræa lævigata.
Hypericum patulum.
Aug. 2, Cephalanthus occidentalis.
Clematis Flammula.
Hypericum aureum.
Hypericum proliferum.
Vitis aconitifolia.
Vitis heterophylla.
Spiræa millifolium.
Amorpha canescens.
Erica vagans.

Aug. 2, Calluna vulgaris.
4, Spiræa tomentosa.
6, Hibiscus Syriacus.
8. Aralia Chinensis.
14, Hydrangea paniculata.
Oxydendrum arboreum.
Sept. 12, Callicarpa gracilis.
Vitex Agnus-Castus.
Oct. 21, Hamamelis Virginica.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1882.

President.

FRANCIS B HAYES, of Boston.

Vice-Presidents.

JOHN B. MOORE, of Concord.
JOHN CUMMINGS, of Woburn.
BENJAMIN G. SMITH, of Cambridge.
CHARLES H. B. BRECK, of Boston.

Treasurer and Superintendent of the Building.

GEORGE W. FOWLE, of Boston.

Secretary and Librarian.

ROBERT MANNING, of Salem.*

Recording Secretary.

ROBERT MANNING, of Salem.

Professor of Botany and Vegetable Physiology.

JOHN ROBINSON, of Salem.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Standing Committees.

Executive.

THE PRESIDENT, FRANCIS B. HAYES, CHAIRMAN.
THE EX-PRESIDENTS, MARSHALL P. WILDER, CHARLES M. HOVEY, JAMES F. C. HYDE, WILLIAM C. STRONG, FRANCIS PARKMAN, WILLIAM GRAY, JR.; CHAIRMAN OF FINANCE COMMITTEE, H. H. HUNNEWELL; F. L. AMES, CHARLES H. B. BRECK, JOHN C. HOVEY, HENRY P. WALCOTT.

* Communications for the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

Finance.

H. HOLLIS HUNNEWELL, CHAIRMAN.

FRANCIS B. HAYES. F. L. AMES.

Publication and Discussion.

BENJAMIN G. SMITH, CHAIRMAN.

JOHN B. MOORE. WILLIAM H. HUNT.

Establishing Prizes.

CHAIRMAN OF COMMITTEE ON FRUITS, CHAIRMAN.

CHAIRMEN OF COMMITTEES ON FLOWERS, VEGETABLES, AND GARDENS, *EX OFFICIIS;* C. M. ATKINSON, P. BROWN HOVEY, FEARING BURR.

Library.

WILLIAM E. ENDICOTT, CHAIRMAN.

THE PROFESSOR OF BOTANY AND VEGETABLE PHYSIOLOGY AND THE PROFESSOR OF ENTOMOLOGY, *EX OFFICIIS;*

HENRY P. WALCOTT. FRANCIS H. APPLETON.

J. D. W. FRENCH. E. P. RICHARDSON.

Gardens.

JOHN G. BARKER, CHAIRMAN.

CHAIRMEN OF COMMITTEES ON FRUITS, FLOWERS, AND VEGETABLES, *EX OFFICIIS;* GEORGE S. HARWOOD, HENRY ROSS, E. L. BEARD.

Fruit.

E. W. WOOD, CHAIRMAN.

P. BROWN HOVEY.	CHARLES F. CURTIS.	O. B. HADWEN.
BENJAMIN G. SMITH.	J. W. MANNING.	WARREN FENNO.

Plants and Flowers.

WILLIAM H. SPOONER, CHAIRMAN.

PATRICK NORTON.	JAMES CARTWRIGHT.	J. H. WOODFORD.
F. L. HARRIS.	CHARLES W. ROSS.	DAVID ALLAN.

Vegetables.

CHARLES N. BRACKETT, CHAIRMAN.

JOSIAH CROSBY.	GEORGE W. PIERCE.	CHARLES E. GRANT.
WALTER RUSSELL.	SAMUEL HARTWELL.	M. W. CHADBOURNE.

Committee of Arrangements.

CHARLES H. B. BRECK, CHAIRMAN.

CHAIRMEN OF COMMITTEES ON FRUITS, FLOWERS, VEGETABLES, AND GARDENS, *EX OFFICIIS:*

JOHN C. HOVEY.	CHARLES H. HOVEY.	WILLIAM H. HALLIDAY.
C. M. ATKINSON.	JAMES COMLEY.	CHARLES F. CURTIS.
JOSEPH H. WOODFORD.		WARREN HEUSTIS.

MEMBERS FOR LIFE.

Change of residence, or any inaccuracies, should be promptly reported to the Secretary.

Adams, George E.,	Medford.
Albro, Charles,	Taunton.
Alger, R. F.,	Hinsdale.
Allan, David,	Belmont.
Ames, F. L.,	North Easton.
Ames, Frank M.,	Canton.
Ames, George,	Boston.
Ames, P. Adams,	"
Amory, Charles,	"
Amory, Frederick,	Brookline.
Amory, James S.,	Boston.
Anderson, Alexander,	Hingham.
Andrews, Charles L.,	Swampscott.
Andrews, Frank W.,	Boston.
Andros, Milton,	Brookline.
Appleton, Edward,	Reading.
Appleton, Francis H.,	Peabody.
Appleton, Wm. S.,	Boston.
Atkins, Elisha,	Belmont.
Avery, Edward,	Boston.
Ayer, Adams,	"
Ayling, Isaac,	"
Bacon, George,	Brookline.
Bailey, Edwin C.,	Concord, N. H.
Baker, William E.,	Boston.
Bancroft, John C.,	Milton.
Banfield, Francis L.,	Boston.
Barnard, Rev. C. F.,	"
Barnard, James M.,	"
Barnard, Robert M.,	Everett.
Barnes, Walter S.,	Somerville.
Barnes, William H.,	Boston.
Barney, Levi C.,	"
Barratt, James,	Cambridge.
Barrett, Edwin S.,	Concord.
Barrows, Thomas,	Dedham,
Bartlett, Edmund,	Newburyport.
Bates, Amos,	Hingham.
Bates, Caleb,	Kingston.
Bayley, John P.,	Boston.
Beal, Alexander,	Dorchester.
Beckford, D. R., Jr.,	Dedham.
Bell, Joseph H.,	Quincy.
Bemis, Emery,	Grantville.
Berry, James,	Boston.
Bickford, Weare D.,	Allston.
Birchard, Charles,	Framingham.
Black, James W.,	Boston.
Blagg, Samuel,	Newbern, N. C.
Blanchard, J. W.,	Boston.
Blaney, Henry,	Brookline.
Blinn, R. D.,	Lexington.
Bliss, William,	Springfield.
Bocher, Ferdinand,	Boston.
Bockus, Charles E.,	Dorchester.
Bond, George W.,	Boston.
Borland, John N.,	New London, Ct.
Botume, John,	Stoneham.
Bouvé, Thomas T.,	Boston.
Bowditch, Azell C.,	Somerville.
Bowditch, J. Ingersoll,	Boston.
Bowditch, Wm. E.,	"
Bowker, William H.,	"
Brackett, Cephas H.,	Brighton.
Brackett, Charles N.,	Newton.
Bradish, Levi J.,	Boston.
Bragg, Samuel A. B.,	Mattapan.
Breed, Henry A.,	Lynn.
Bresee, Albert,	Hortonville, Vt.
Brewer, John Reed,	Boston.
Brewer, Otis,	"
Brigham, William T.,	"
Bright, William E.,	Waltham.
Brimmer, Martin,	Boston.
Brintnall, Benjamin,	"
Brooks, Francis,	Medford.
Brown, Charles E.,	Yarmouth, N. S.

Brown, Edward J.,	Brookline.	Clay, Henry,	Dorchester.
Brown G. Barnard,	Boston.	Cleary, Lawrence,	West Roxbury.
Brown, George B.,	"	Clement, Asa,	Dracut.
Brown, Jacob,	Woburn.	Cleveland, Ira,	Dedham.
Brownell, E. S.	Essex June., Vt.	Cobb, Albert A.,	Brookline.
Bruce, Nathaniel F.,	Stoneham.	Coburn, Isaac E.,	Everett.
Bullard, William S.	Boston.	Codman, James M.,	Brookline.
Burnett, Joseph,	Southborough.	Codman, Ogden,	Lincoln.
Burnham, T. O. H. P.,	Boston.	Coffin, G. Winthrop,	West Roxbury.
Burr, Fearing,	Hingham.	Coffin, William E.,	Boston.
Burr, Matthew H.,	"	Converse, E. S.,	Malden.
Buswell, Edwin W.,	New York.	Converse, Parker L.,	Woburn.
Buswell, Frank E.,	" "	Coolidge, Joshua,	Watertown.
Butler, Aaron,	Wakefield.	Copeland, Franklin,	West Dedham.
Butterfield, Wm. P.	Arlington.	Cox, George P.,	Malden.
		Coy, Samuel L.,	Boston.
Cadness, John,	Flushing, N. Y.	Craft, George,	Brookline.
Cains, William,	South Boston.	Crocker, George O.,	New Bedford.
Calder, Augustus P.,	Boston.	Crocker, Uriel,	Boston.
Capen, John,	"	Crosby, Josiah,	Arlington.
Carlton, Samuel A.,	Somerville.	Crowell, Philander,	Chelsea.
Carruth, Charles,	Boston.	Crowell, Randall H.,	"
Carruth, Nathan,	Dorchester.	Cummings, John,	Woburn.
Carter, Miss Sabra,	Wilmington,	Curtis, Charles F.,	Jamaica Plain.
Chamberlain, C. W.,	Arlington.	Curtis, George S.,	" "
Chapin, N. G.,	Brookline.	Cushing, Robert M.,	Boston.
Chapman, Edward,	Arlington.		
Chase, A. J.	Lynn.	Daggett, Henry C.,	Boston.
Chase, Daniel E.,	Somerville.	Damon, Samuel G.,	Arlington.
Chase, Hezekiah S.,	Boston.	Dana, Charles B.,	Brookline.
Chase, William M.,	Worcester.	Darling, Charles K.,	Boston.
Cheney, Benjamin P.,	Boston.	Davenport, Edward,	Dorchester.
Child, Francis J.,	Cambridge.	Davenport, Geo. E.,	Boston.
Child, William C.,	Medford.	Davenport, Henry,	"
Childs, Francis,	Charlestown.	Davis, Curtis,	Cambridge.
Childs, N. R.,	Dorchester.	Davis, Hervey,	Cambridgeport.
Claflin, Henry,	Brighton.	Dawson, Jackson,	Jamaica Plain.
Claflin, William,	Newton.	Deblois, Stephen G.,	Boston.
Clapp, Edward B.,	Dorchester.	Denny, Clarence H.	"
Clapp, E. W.,	Walpole.	Denny, R. S.,	Dorchester.
Clapp, James H.	Dorchester.	Denton, Eben,	Braintree.
Clapp, Lemuel.	"	Dewson, Francis A.,	Boston.
Clapp, William C.,	"	Dexter, F. Gordon,	"
Clark, Orus,	Boston.	Dickerman, Geo. H.	Somerville.
Clark, William S.,	Amherst.	Dickinson, Alex.,	Cambridgeport.
Clark, W. L.	Neponset.	Dike, Charles C.,	Stoneham.
Clarke, Miss Cora H.,	Jamaica Plain.	Dix, Joseph,	Boston.

Dorr, George,	Dorchester.	Glover, Albert,	Boston.
Dove, George W.W.,	Andover.	Glover, Joseph B.	"
Durant, William,	Boston.	Goddard, A. Warren,	Brookline.
Durfee, Mrs. F. B.,	Fall River.	Goddard, Mrs. M. T.,	Newton.
Durfee, George B.,	" "	Gorham, James L.,	Jamaica Plain.
Dutcher, F. J.,	Hopedale.	Gould, Francis,	Arlington.
D'Wolf, John L.,	Boston.	Gould, Samuel,	Boston.
		Gray, James,	Wellesley.
Eaton, Horace,	Quincy.	Gregory, J. J. H.,	Marblehead.
Eldridge, Azariah,	Yarmouthport.	Greig, George,	Newton.
Eldridge, E. H.,	Boston.	Grinnell, Joseph,	New Bedford.
Ellicott, J. P.,	Jamaica Plain.	Groom, Thomas,	Dorchester.
Endicott, William E.,	Canton.	Grundel, Hermann,	"
Eustis, William C.,	Hyde Park.	Guild, J. Anson,	Brookline.
Everett, George,	Concord.		
Everett, Otis,	Boston.	Hadwen, Obadiah B.,	Worcester.
Everett, William,	"	Hall, Edwin A.,	Cambridgeport.
Ewell, William,	Dorchester.	Hall, George A.,	Chelsea.
		Hall, George R.,	Bristol, R. I.
Fairchild, Charles,	Belmont.	Hall, John R.,	Boston.
Farlow, John S.,	Newton.	Hall, Lewis,	Cambridge.
Faxon, John,	Quincy.	Hall, Stephen A.,	Revere.
Fay, Mrs. R. L.,	Chelsea.	Hall, William F.,	Brookline.
Fenno, J. B.,	Boston.	Halliday, William H.,	Boston.
Fewkes, Edwin,	Newton Highl'ds.	Hammond, Gard. G.,	"
Fillebrown, John,	Arlington.	Hammond, Samuel,	"
Fisher, James,	Boston.	Hanson, P. G.,	Woburn.
Fisher, Warren,	"	Harding, C. L.,	Cambridge.
Flagg, Augustus,	"	Harding, George W.,	Dorchester.
Fleming, Edwin,	West Newton.	Harding, Lewis B.,	Boston.
Fletcher, John W.,	Chelsea.	Harding, W. C.,	"
Flint, Charles L.,	Boston.	Hardy, F. D., Jr.,	Cambridgeport.
Flint, David B.,	Watertown.	Harris, Charles,	Cambridge.
Flynt, William N.,	Monson.	Hastings, Edm. T.,	Boston
Foster, John H.,	Boston.	Hathaway, Seth W.,	Marblehead.
Fowle, William B.,	Auburndale.	Haughton, James,	Boston.
Freeland, Chas. Wm.,	Boston.	Haven, Alfred W.,	Portsm'th, N. H.
Freeman, Abraham,	Dorchester.	Hayes, Daniel F.,	Exeter, N. H.
French, Jonathan,	Boston.	Hayes, Francis B.,	Boston.
French, J. D. W.,	"	Hayward, Daniel H.,	No. Cambridge.
Fuller, Henry Weld,	"	Hazeltine, Hazen,	Boston.
		Head, Charles D.,	Brookline.
Galvin, John,	West Roxbury.	Hilbourn, A. J.,	Chelsea.
Gardner, Henry N.,	Belmont.	Hill, George,	Arlington.
Gardner, John L.,	Brookline.	Hill, John,	Stoneham.
Gibbs, Wolcott,	Cambridge.	Hilton, William,	Boston.
Gillard, William,	Boston.	Hitchings, E. H.,	"
Gilson, F. Howard,	Reading.	Hodgkins, John E.,	Chelsea.

Hollis, George M.,	Grantville.	Kidder, Nath'l T.,	Boston.
Hollis, John W.,	Brighton.	Kimball, A. P.,	"
Holt, Mrs. S. A.,	Winchester.	King, Franklin,	Dorchester.
Hooper, Robert C.,	Boston.	King, William S.	Boston.
Hooper, Thomas,	Bridgewater.	Kingman, Abner A.,	Brookline.*
Horner, Mrs. C. N. S.,	Georgetown.	Kingman, C. D.,	Middleborough.
Hovey, Charles H.,	Cambridge.	Kinsley, Lyman,	Cambridgeport.
Hovey, Charles M.,	"	Kittredge, E. A.,	Boston.
Hovey, John C.,	Cambridgeport.		
Hovey, P. Brown,	"	Lamb, Thomas,	Boston.
Howe, George,	Boston.	Lancaster, Charles B.,	Newton.
Howland, John, Jr.,	New Bedford.	Lawrence, Amos A.,	Brookline.
Hubbard, Charles T.,	Boston.	Lawrence, Edward,	Charlestown.
Hubbard, G. G.,	Cambridge.	Lawrence, James,	Groton.
Hubbard, J. C.,	Boston.	Lawrence, John,	Boston.
Hubbard, William J.,	"	Lee, Henry,	"
Huckins, J. W.,	"	Leeson, Joseph R.,	Newton Centre.
Humphrey, F. J.,	Dorchester.	Lemme, Frederick,	Natick.
Humphrey, G. W.,	Dedham.	Leuchars, Robert B.,	Boston.
Hunneman, Jos. H.,	Boston.	Lewis, A. S.,	Framingham.
Hunnewell, H. H.	Wellesley.	Lewis, William G.,	"
Hunt, Franklin,	Boston.	Lincoln, George,	Hingham.
Hunt, Moses,	"	Locke, William H.,	Belmont.
Hunt, William H.,	Concord.	Lodge, Giles H.,	Swampscott.
Hyde, James F. C.,	Newton.	Loftus, John P.,	Boston.
		Loomis, Jason B ,	Chelsea.
Inches, Henderson,	Boston.	Lord, George C.,	Newton.
Inches, Herman B.,	"	Loring, Alfred,	South Hingham.
		Loring, Caleb W.,	Boston.
Jackson, Abraham,	Boston.	Loring, George B.,	Salem.
Janvrin, William S.,	Revere.	Lovett, George L.,	Boston.
Jeffries, John, Jr.,	Boston.	Low, Ariel,	"
Jenks, Charles W.,	"	Lowder, John,	Watertown.
Joyce, Mrs. E. S.,	Medford.	Lowell, Augustus,	Boston.
		Luke, Elijah H.,	Cambridgeport.
Kakas, Edward,	Medford.	Lumb, William,	Boston.
Kendall, D. S.,	Woodstock, Ont.	Lunt, Charles H.,	Jamaica Plain.
Kendall, Edward,	Cambridgeport.	Lyman, Theodore,	Brookline.
Kendall, J. R.,	Woburn.	Lyon, Henry,	Charlestown.
Kendrick, Mrs. H. P.,	Allston.		
Kennard, Charles W.,	Boston.	Mahoney, John,	Boston.
Kennedy, George G.,	"	Mann, James F.,	Cambridge.
Kenney, John M.,	Roxbury.	Mann, Jonathan,	Cambridge.
Kent, John,	Charlestown.	Manning, Jacob W.,	Reading.
Keyes, E. W.,	Denver, Col.,	Manning, Mrs. L. B.,	"
Keyes, George,	Concord.	Manning, Robert,	Salem.
Kidder, Henry P.,	Boston.	Mansfield, Henry S.	Blackstone.

Marshall, Frederick,	Everett.	Partridge, Horace,	Somerville.
Martin, Darius A.,	Chelsea.	Paul, Alfred W.,	Dighton.
Martin, John S.,	Boston.	Peabody, John E.,	Salem.
Matthews, Nathan,	"	Pearce, John,	West Roxbury.
McCarty, Timothy,	Providence, R. I.	Peck, O. H.,	Franklin.
McClure, John,	Revere.	Peck, W. G.,	Arlington.
Merriam, Herbert,	Weston.	Pierce, Silas,	Boston.
Merriam, M. H.,	Lexington.	Penniman, A. P.,	Waltham.
Merrifield, W. T.,	Worcester.	Perkins, Augustus T.,	Boston.
Mills, Charles H.,	Boston.	Perkins, Edward N.,	Brookline.
Milmore, Martin,	"	Perkins, William P.,	"
Minton, James,	Dorchester.	Perry, George W.,	Malden.
Mixter, Charles,	Boston.	Philbrick, William D.,	Newton Centre.
Moore, John B.,	Concord.	Phillips, John C.,	Boston.
Moore, John H.,	"	Pierce, Dean,	Brookline.
Morrill, Joseph, Jr.,	Boston.	Pierce, George W.,	Everett.
Morse, Samuel F.,	"	Pierce, Henry L.,	Dorchester.
Morse, Sidney B.,	"	Pierce, Samuel B.,	"
Morse, William A.,	"	Poole, Benjamin C.,	Chelsea.
Motley, Thomas,	West Roxbury.	Poor, John R.,	Somerville.
Mudge, George A.,	Portsm'th, N. H	Potter, Joseph S.,	Arlington.
Mudge, George W.,	Lynn.	Prang, Louis,	Boston.
Munroe, Otis,	Boston.	Pratt, Lucius G.,	West Newton.
		Pratt, Robert M.,	Boston.
Needham, Daniel,	Groton.	Pratt, William,	Winchester.
Newhall, George,	Dorchester.	Pray, Mark W.,	Malden.
Newman, J. R.,	Winchester.	Prescott, C. H.,	Cornwallis, N.S.
Newton, Rev. W. W.,	Boston.	Prescott, Eben C.,	Boston.
Nichols, Mrs. F.,	Dorchester.	Prescott, W. G.,	"
Nickerson, Albert W.,	Dedham.	Prescott, William G.,	Quincy.
Norton, Charles W.,	Allston.	Preston, George H.,	Boston.
Nourse, Benjamin F.,	Boston.	Preston, John,	Dorchester.
Nourse, Benjamin F.,	Cambridgeport.	Pringle, Cyrus G.,	Charlotte, Vt.
		Proctor, Thomas P.,	West Roxbury.
Oakman, Hiram A.,	No. Marshfield.	Prouty, Gardner,	Littleton.
Osgood, Jas. Ripley,	Boston.	Putnam, Joshua H.,	Brookline.
Otis, Theodore C.,	"		
Oxnard, George D.,	"	Ramsay, A. H.,	Cambridge.
		Rand, Edward S.,	Boston.
Packer, Charles H.,	Boston.	Rand, Miss E. L.,	Newton Highl'ds.
Page, Thomas,	"	Rand, Oliver J.,	Cambridgeport.
Paine, Robert T.,	"	Rawson, W. W.,	Arlington.
Palmer, John P.,	"	Ray, Joseph G.,	Franklin.
Park, John C.,	Somerville.	Rayner, John J.,	Lexington.
Parker, Augustus,	Boston.	Reed, George W.,	Boston.
Parker, Harvey D.,	"	Richards, John J.,	"
Parkman, Francis,	Jamaica Plain.	Richards, William B.,	"
Partridge Henry,	Dunkirk, N. Y.	Richardson, C. E.,	Cambridge.

Richardson, Geo. C., Cambridge.
Robbins, I. Gilbert, Boston.
Robbins, Nathan, Arlington.
Robeson, W. R., Boston.
Robinson, J. H., Dorchester.
Robinson, John, Salem.
Rogers, John H., Boston.
Ross, Henry, Newton.
Ross, M. Denman, Boston.
Ross, Waldo O., "
Ruddick, Dr. Wm. H., South Boston.
Russell, George, Woburn.
Russell, John E., Leicester.
Russell, Walter, Arlington.

Sampson, Geo. R., New York.
Sanborn, Amos C., Cambridgeport.
Sanford, O. S., Cordaville.
Sargent, Charles S., Brookline.
Sargent, Ignatius, "
Saville, Richard L., "
Sawyer, Timothy T., Charlestown.
Scott, Charles, Newton.
Scudder, C. W., Brookline.
Sears, J. Montgomery, Boston.
Seaver, Nathaniel, East Boston.
Seaver, Robert, Jamaica Plain.
Shaw, C. C., Milford, N. H.
Shaw, S. P., Cambridge.
Sheafe, Charles C., Boston.
Sheafe, William, Brookline.
Sheldon, Oliver S., Milton.
Shimmin, Charles F., Boston.
Shorey, John L., Lynn.
Skinner, Francis, Boston.
Slack, Charles W., "
Slack, Lewis, Brookline.
Smith, Benjamin G., Cambridge.
Smith, Calvin W., Grantville.
Smith, Charles H., Jamaica Plain.
Smith, Chauncey, Cambridge.
Smith, E. N., San Francisco.
Smith, George O., Boston.
Smith, James H., Needham.
Smith, W. B., Boston.
Snow, Eben, Cambridge.
Snow, Miss Salome H., Brunswick, Me.
Southmayd, John K., Boston.
Sparhawk, Edw'd C., Brighton.
Spaulding, Edward, Jamaica Plain.
Spaulding, M. D., Boston.
Speare, Alden, Newton Centre.
Springall, George, Malden.
Springer, John, Sterling.
Stetson, Nahum, Bridgewater.
Stickney, Rufus B., Somerville.
Stimpson, George, New York.
Stimpson, H. H., Cambridge.
Stone, Amos, Everett.
Stone, George F., Newton.
Stone, Phineas J., Charlestown.
Story, E. Augustus, Brighton.
Strong, William C., Newton Centre.
Sturgis, John H., Boston.
Sturgis, Russell, Jr., "
Sturtevant, E. Lewis, S. Framingham.
Sumner, Edward, Dedham.
Surette, Louis A., Concord.
Swain, Charles D., Roxbury.

Taft, John B., Boston.
Tappan, Charles, "
Taylor, Horace B., "
Thacher, Alfred C., Dorchester.
Thayer, Henry, N. Cambridge.
Thayer, Nathaniel, Boston.
Thurlow, Thomas C., Newburyport.
Tilton, Stephen W., Boston.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss H. S., Boston.
Torrey, Everett, Charlestown.
Turner, John M., Dorchester.
Turner, Roswell W, Boston.
Turner, Royal W., Randolph.

Underwood, Guy C., Boston.
Upham, Henry, Brookline.

Vass, William J., Boston.
Vose, Benjamin C., Hyde Park.

Wainwright, Wm. L., Braintree.
Wakefield, E. H, Chelsea.

Walcott, Edward,	Pawtucket.	Whitely, Edward,	Cambridge.
Walcott, Henry P.,	Cambridge.	Whiting, Nathaniel,	Brookline.
Wales, George O.,	Braintree.	Whitmore, C. O.,	Boston.
Walker, Edw. C. R.,	Dedham.	Whittle, George W.,	Somerville.
Walker, Samuel A.,	"	Whytal, Thomas G.,	New York.
Walker, T. W.,	Waltham.	Wilbur, G. B.,	Watertown.
Walley, Mrs. W. P.,	Boston.	Wilcutt, Levi L.,	West Roxbury.
Ward, John,	Newton.	Wilder, Edw. Baker,	Dorchester.
Wardwell, W. H.,	Newton Centre.	Wilder, Henry A.,	Boston.
Ware, Benjamin P.,	Beach Bluff.	Wilder, Marshall P.,	Dorchester.
Warren, George W.,	Boston.	Willard, E. W.,	Newport, R. I.
Washburn, Andrew,	Hyde Park.	Williams, Aaron D.,	Boston.
Wason, Elbridge,	Brookline.	Williams, Benj. B ,	"
Waters, Edwin F.,	Newton Centre.	Williams, Philander,	Taunton.
Waters, George F.,	Newton.	Willis, George W.,	Chelsea.
Watts, Isaac,	Belmont.	Willis, J. C.,	Boston.
Webber, Aaron D.,	Boston.	Wilson, Henry W.,	South Boston.
Weld, Aaron D.,	West Roxbury.	Wilson, Wm. Power,	Boston.
Weld, Dr. Moses W.,	Boston.	Winship, F. Lyman,	Brighton.
Weld, Richard H.,	"	Winship, Herman,	"
Weld, William G.,	Brookline.	Woerd, Charles V.,	Waltham.
Weston, Leonard W.,	Lincoln.	Woerd, C. V., Jr.,	"
Weston, Seth,	Revere.	Wood, Luke H.,	Marlborough.
Wetherell, Leander,	Boston.	Wood, R. W.,	Jamaica Plain.
Wheelwright, A. C.,	"	Wood, William K.,	West Newton.
Whipple, John A.,	"	Woods, Henry,	Dorchester.
Whitcomb, Wm B.,	Medford.	Woodward, Royal,	Brookline.
White, Benjamin C.,	Boston.	Wright, George C.,	West Acton.
White, Edward A.,	Boston.	Wrisley, Frank,	New York.
White, Francis A.,	Brookline.		

ANNUAL MEMBERS.

Abbott, S. L., M. D.,	Boston.
Adams, Charles F.,	Quincy.
Adams, C. S.,	Framingham.
Allen, Andrew F.,	Arlington.
Allen, Calvin,	Boston.
Allen, Nathaniel T.,	West Newton.
Ames, R. W.,	Boston.
Anderson, Charles J.,	Longwood.
Atkinson, Chas. M.,	Brookline.
Atkinson, Edward,	"
Atkinson, W. B.,	Newburyport.
Bacon, Augustus,	Boston
Bacon, William,	"
Bard, James,	Framingham.
Barker, John G.,	Lynn.
Barnes, Parker,	Boston.
Batchelder, G. W.,	Dorchester.
Beard, Edward L.,	Cambridge.
Beebe, J. Arthur,	Boston.
Bird, Charles,	Revere.
Bird, John L.,	Dorchester.
Bliss, B. K.,	New York.
Bock, William A.,	N. Cambridge.
Bolles, Matthew,	Boston.
Bolles, William P.,	"
Bolton, John B.,	Somerville.
Boott, William,	Boston.
Bowditch, E Francis,	Framingham.
Bradlee, John T.,	Boston.
Breck, Charles H.,	Brighton.
Breck, Charles H. B ,	"
Brewer, Thomas M.,	Boston.
Brooks, George,	Brookline.
Brown, A. S.,	Jamaica Plain.
Brown, Atherton T.,	Boston.
Brown, Benjamin F.,	Charlestown.
Brown, Jona. Jr.,	Somerville.
Brown, Joseph T.,	Boston.
Bryant, G. J. F.,	"
Bull, E. W.,	Concord.
Bullard, Calvin,	Boston.
Burley, Edward,	Beverly.
Burr, Charles C.,	Newton.
Butler, Edward,	Wellesley.
Capen, Aaron D.,	Mattapan.
Carter, Maria E.,	Woburn.
Cartwright, James,	Wellesley.
Chadbourne, M. W.,	Watertown.
Chaffin, John C.,	Newton.
Chapin, Gardner S.,	Arlington.
Chapin, George H.,	Watertown.
Chase, Henry L.,	Lynn.
Chase, Joseph S.,	Malden.
Cheney, Amos P.,	South Natick.
Clark, James W.,	Framingham.
Clark, Joseph,	Canton.
Clark, Joseph W.,	Dedham.
Cobb, Jonathan H.,	"
Coe, Henry F.,	West Roxbury.
Comley, James,	Lexington.
Cox, James F.,	Abington.
Crafts, William A.,	Boston.
Crosby, J. Allen,	Jamaica Plain.
Cruickshanks, J. T.,	Natick.
Curtis, Daniel T.,	Boston.
Curtis, Joseph H.,	"
Darling, Moses, Jr.,	South Boston.
Davenport, A. M.,	Watertown.
Davis, Frederick,	Newton.
Davis, James,	Boston.
Davis, Thomas M.,	Cambridgeport.
Day, George B ,	Boston.
Dean, A. J.,	"
Dolbear, Mrs. Alice J.,	Somerville.
Doogue, William,	Boston.
Duffley, Daniel,	Brookline.
Dupee, James A.,	"

Dyer, Mrs. E. D.,	Eyota, Minn.
Eaton, Jacob,	Cambridgeport.
Edgar, William,	Newtonville.
Ewings, Luther B.,	Boston.
Falconer, John,	Rochester.
Falconer, William,	Cambridge.
Farrer, Amasa,	Stoneham.
Farrier, Mrs. C.,	"
Faxon, Edwin,	Jamaica Plain.
Fay, Henry G.,	Brookline.
Felton, Arthur W.,	West Newton.
Fenno, Warren,	Revere.
Fletcher, Edwin,	Acton.
Foster, Joshua T.,	Medford.
Fowle, Charles L.,	Dorchester.
Fowle, George W.,	Jamaica Plain.
Fowle, Henry D.,	Boston.
French, William E.,	"
Frost, George,	West Newton.
Frost, Stiles,	Boston.
Fuller, William G.,	Stoneham.
Gane, Henry A.,	West Newton.
Gardiner, Claudius B.,	Newburyport.
Gardner, John,	Dedham.
Garfield, Charles,	Medford.
Gaut, Samuel N.,	Somerville.
Gilbert, John,	Boston.
Gilbert, Samuel,	"
Gilbert, W. A.,	Neponset.
Gill, Mrs. E. M.,	Medford.
Gleason, C. W.,	Boston.
Gleason, Herbert,	Malden.
Godbold, G. A.,	Chelsea.
Goddard, Thomas,	Boston.
Goodwin, Lester,	Brighton.
Gould, William P.,	Jamaica Plain.
Grant, Charles E.,	Boston.
Graves, Frank H.,	West Newton.
Gray, Howard,	Dorchester.
Gray, William Jr.,	"
Gray, William, 3d,	"
Greene, Malcolm H.,	"
Grew, Henry,	"
Guerineau, Louis,	Malvern, Ark.
Hall, William T.,	Revere.
Hamlin, Delwin A.,	South Boston.
Harris, Miss Ellen M.,	Jamaica Plain.
Harris, Frederick L.,	South Natick.
Hartwell, Samuel,	Lincoln.
Harwood, George S.,	Newton.
Haskell, Edward,	New Bedford.
Hatch, Samuel,	Boston.
Hayes, John L.,	Cambridge.
Hayward, George P.,	Hingham.
Hazleton, H. L.,	Boston.
Hersey, Alfred H.,	Hingham.
Hersey, Edmund,	"
Heustis, Warren,	Belmont.
Hews, Albert H.,	No. Cambridge.
Higbee, Charles H.,	Salem.
Hill, Benjamin D.,	Peabody.
Hill, Miss Katie A.,	Lowell.
Hinckley, Mrs. D. F.,	Chelsea.
Howe, Rufus,	Marlborough.
Ireland, George W.,	Somerville.
Jameson, G. W.,	East Lexington.
Jones, Moses,	Brookline.
Jordan, Samuel,	Yarmouth.
Kelsey, Fred W.,	Waverly, N. Y.
Kendall, Jonas,	Framingham.
Kennard, Martin P.,	Brookline.
Kenrick, Miss A. C.,	Newton.
Lamprell, Simon,	Marblehead.
Lang, John H. B.,	Dorchester.
Langworthy, I. P.,	Chelsea.
Leavens, E. W.,	Malden.
Lee, Francis H.,	Salem.
Livermore, Miss M.,	Mt. Auburn.
Loring, Charles G.,	Boston.
Loring, John A.,	"
Lothrop, David W.,	West Medford.
Lothrop, H. A.,	Sharon.
Lothrop, Thornton K.,	Boston.
Lowell, John,	Newton.
Marcou, Mrs. J.,	Cambridge.
Markoe, G. F. H.,	Boston.

May, F. W. G., Boston.
McDermott, Andrew, "
McIntosh, A. S., Boston.
McLaren, Anthony, Forest Hills.
Mellen, George M., Brookline.
Merrill, J. Warren, Cambridgeport.
Merrill, S. A., Danvers.
Minton, Peter J., Forest Hills.
Morandi, Francis, Malden.
Morris, Thomas D., Boston.
Morrison, Hugh, Bay View.
Morton, James H., Boston.
Murray, Daniel D., Brookline.
Muzzey, Rev. A. B., Cambridge.

Nightingale, Crawford, Dorchester.
Norton, Michael H., Boston.
Norton, Patrick, "
Noyes, George N., Auburndale.
Nugent, James, Boston.

O'Brien, James, Jamaica Plain.
Oldreive, Richard, Newton.
Olney, Richard, West Roxbury.
Owen, John, Cambridge.

Park, William D., Boston.
Parker, John, "
Parsons, William, "
Patterson. James, Cambridge.
Payson, Samuel R., Boston.
Phillips, Nathaniel, Dorchester.
Pickering, Mrs. E.C., Cambridge.
Plimpton, W. P., West Newton.
Power, Charles J., S. Framingham.
Pratt, Mrs. Mary L., Hingham.
Pratt, Samuel, Chelsea.
Prince, Thomas, Boston.
Putnam, Charles A., Salem.
Putnam, Henry W., "

Randall, Macey, Sharon.
Ranlett, S. A., Melrose.
Richards, John S., Brookline.
Richardson, E. P., Lawrence.
Richardson, Horace, Framingham.
Ridler, Charles E., Kingston.
Roberts, Edward, Hyde Park.
Rogers, John F., Cambridge.
Ross, Charles W., Newtonville.
Russell, George, Boston.

Safford, Fred'k M, Dorchester.
Saunders, Miss M. T., Salem.
Saville, George, Quincy.
Sawtell, J. M, Fitchburg.
Schlegel, Adam, Boston.
Schmitt, Georg A., Brookline.
Scott, A. E., Lexington.
Scott, George H., Allston.
Scudder, Samuel H., Cambridge.
Shattuck, F. R., Boston.
Shedd, Abraham B., Lexington.
Shedd, Arthur B., "
Shepherd, C. W., West Newton.
Sheppard, Edwin, Lowell.
Sherman, Japhet, Medford.
Simpson, Michael H., Saxonville.
Sleeper, John S., Boston.
Snow, Eugene A, Melrose.
Southworth, Edward, Quincy.
Spooner, William H., Jamaica Plain.
Sprague, Charles J., Boston.
Squire, John P., Arlington.
Starbird, Louis D., Malden.
Stevenson, Hamilton, Woburn.
Stone, Eliphalet, Dedham.
Stone, Samuel G., Charlestown.
Storer, Charles, Natick.
Story, Miss Sarah W., Brighton.
Strahan, Thomas, Chelsea.
Sullivan, J. L. D., Somerville.
Swan, Charles W., Boston.

Tailby, Joseph, Wellesley.
Talbot, Josiah W., Norwood.
Tapper, Thomas, Canton.
Tobey, Miss M. B., Brookline.
Todd, Jacob, Boston.
Torrey, Bradford, "
Trautman, Martin, Boston.
Turner, Nathaniel W., "

Underwood, Wm. J., Belmont.
Van der Veur, P. W., New York.
Vaughan, J. C., Chicago, Ill.
Vinton, Mrs. C. A., Boston.

Walker, Charles H., Chelsea.
Walker, Joseph T., Boston.
Walker, William P., Somerville.
Watson, David, Malden.
Webster, John, Salem.
Wellington, Chas. A., E. Lexington.
Wellington, Jos. V., Cambridge.
Wells, Benjamin T., Boston.
Weston, Mrs. L. P., Danvers.
Wheatland, Henry, Salem.
Wheeler, Miss Ann C., Cambridgeport.
Wheildon, Wm. W., Concord.
White, Nelson B., Norwood.
Whitney, Joel, Winchester.
Whiton, Starkes, Hingham Centre.
Wilde, Hiram, Randolph.
Williams, Dudley, Jamaica Plain.
Wilmarth, H. D., " "
Wilson, B. Osgood, Watertown.
Wilson, George W., Malden.
Wiswall, Henry M., Watertown.
Withington, Henry H., Jamaica Plain.
Wolcott, Mrs. J. W., Boston.
Wood, Mrs. Anna D., West Newton.
Wood, Miss C. S., " "
Wood, E. W., " "
Woodford, Jos. H., Newton.

Zirngiebel, Denys, Needham.

EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXVI. — Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments; and any member having once paid an admission fee, may become a Life Member by the payment of twenty dollars in addition thereto.

SECTION XXVII. — Admission Fee and Annual Assessment.

Every subscription member, before he receives his Diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIX. — Discontinuance of Membership.

Any member who shall neglect for the space of two years to pay his annual assessment, shall cease to be a member of the Society, and the Treasurer shall erase his name from the List of Members.

The attention of Annual Members is particularly called to Section XXIX.

HONORARY MEMBERS.

A * denotes the member deceased. Correspondents of the Society and others will confer a favor by communicating to the Secretary information of the decease, change of residence, etc., of Honorary or Corresponding Members.

*Benjamin Abbott, LL. D., Exeter, N. H.

*John Abbott, Brunswick, Me.

*Hon. John Quincy Adams, LL. D., late President of the United States, Quincy.

*Prof. Louis Agassiz, Cambridge.

*William T. Aiton, late Curator of the Royal Gardens, Kew, England.

Thomas Allen, Ex-President of the St. Louis Horticultural Society, St. Louis, Mo., and Pittsfield, Mass.

*Hon. Samuel Appleton, Boston.

*Hon. James Arnold, New Bedford.

*Edward Nathaniel Bancroft, M. D., late President of the Horticultural and Agricultural Society of Jamaica.

*Hon. Philip P. Barbour, Virginia.

*Don Angel Calderon de la Barca, late Spanish Minister at Washington.

*Robert Barclay, Bury Hill, Dorking, Surrey, England.

*James Beekman, New York.

*L'Abbe Berlèse, Paris.

*Nicholas Biddle, Philadelphia.

*Dr. Jacob Bigelow, Boston.

*Mrs. Lucy Bigelow, Medford.

*Le Chevalier Soulange Bodin, late Secrétaire Général de la Société d'Horticulture de Paris.

Hon. George S. Boutwell, Groton.

*Josiah Bradlee, Boston.

*Hon. George N. Briggs, Pittsfield.

*Hon. James Buchanan, late President of the United States, Lancaster, Penn.

*Jesse Buel, late President of the Albany Horticultural Society, Albany, N. Y.

*Hon. Edmund Burke, late Commissioner of Patents, Washington, D. C.

*Augustin Pyramus de Candolle, Geneva.

Hon. Horace Capron, Ex-U. S Commissioner of Agriculture, Washington, D. C.

*Commodore Isaac Chauncey, U. S. Navy, Brooklyn, N. Y.

*Ward Chipman, late Chief Justice of New Brunswick, St. John.
*Lewis Clapier, Philadelphia.
*Hon. Henry Clay, Lexington, Ky.
H. W. S. Cleveland, Chicago, Ill.
*Admiral Sir Isaac Coffin, Bart., England.
*Zaccheus Collins, late President of the Pennsylvania Horticultural Society, Philadelphia.
*Roswell L. Colt, Paterson, N. J.
Caleb Cope, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.
*William Coxe, Burlington, N. J.
*John P. Cushing, Watertown.
*Charles W. Dabney, late U. S. Consul, Fayal, Azores.
*Hon. John Davis, LL. D., Boston.
*Sir Humphry Davy, London.
*Gen. Henry Alexander Scammel Dearborn, Roxbury.
*James Dickson, late Vice-President of the Horticultural Society of London.
*Mrs. Dorothy Dix, Boston.
*Capt. Jesse D. Elliot, U. S. Navy.
*Hon. Stephen Elliot, LL. D., Charleston, S. C.
*Hon. Henry L. Ellsworth, late Commissioner of Patents, Washington, D C.
*Allyn Charles Evanson, late Secretary of the King's County Agricultural Society, St. John, N. B.
*Hon. Edward Everett, LL. D., Boston.
*Hon. Horace Everett, Vermont.
*F. Faldermann, late Curator of the Imperial Botanic Garden, St. Petersburg.
*Hon. Millard Fillmore, late President of the United States, Buffalo, N. Y.
*Dr. F. E. Fischer, late Professor of Botany at the Imperial Botanic Garden, St. Petersburg.
*Hon. Theodore Frelinghuysen, late President of the American Agricultural Society, New Brunswick, New Jersey.
*Joseph Gales, Jr., late Vice-President of the Horticultural Society, Washington, D. C.
*George Gibbs, New York.
*Stephen Girard, Philadelphia.
*Hon. Robert T. Goldsborough, Talbot County, Maryland.
*Ephraim Goodale, South Orrington, Maine.
*Mrs. Rebecca Gore, Waltham.
*Hon. John Greig, late President of the Domestic Horticultural Society, Canandaigua, N. Y.
*Mrs. Mary Griffith, Charlies Hope, N. J.
*Gen. William Henry Harrison, late President of the United States, North Bend, O.
*S. P. Hildreth, M. D., Marietta, O.
*Thomas Hopkirk, late President of the Glasgow Horticultural Society.
*David Hosack, M. D. late President of the New York Horticultural Society.

*Lewis Hunt, Huntsburg, O.
*Joseph R. Ingersoll, late President of the Pennsylvania Horticultural Society, Philadelphia.
*Gen. Andrew Jackson, late President of the United States, Nashville, Tenn.
*Mrs. Martha Johonnot, Salem.
*Jared Potter Kirtland, M. D., LL. D., East Rockport, O.
*Thomas Andrew Knight, late President of the Horticultural Society of London
*Gen. La Fayette, La Grange, France.
*Le Comte De Lasteyrie, late Vice-President of the Horticultural Society of Paris.
L. A. H. Latour, M. P., 1396 St. Catherine street, Montreal, Canada.
*Baron Justus Liebig, Giessen, Germany.
*Prof. John Lindley, late Secretary of the Horticultural Society of London.
Franklin Litchfield, U. S. Consul at Puerto Cabello, Venezuela.
*Joshua Longstreth, Philadelphia.
*Nicholas Longworth, Cincinnati.
*Jacob Lorillard, late President of the New York Horticultural Society.
*John C. Loudon, London.
*Hon. John A. Lowell, Boston.
*Baron Charles Ferdinand Henry Von Ludwig, late Vice-President of the South African Literary and Scientific Institution, Cape Town, Cape of Good Hope.
*Hon. Theodore Lyman, Brookline.
Col. Theodore Lyman, Brookline.
*Hon. James Madison, late President of the United States, Montpelier, Va.
*Mrs. Charlotte Marryatt, Wimbledon, near London.
Joseph Maxwell, Rio Janeiro.
D. Smith McCauley, U. S. Consul-General, Tripoli.
*Hon. Isaac McKim, late President of the Horticultural Society of Maryland, Baltimore.
Rev. James H. Means, Dorchester, Mass.
*James Mease, M. D., Philadelphia.
*Lewis John Mentens, Brussels, Belgium.
*Hon. Charles F. Mercer, Virginia.
*François André Michaux, Paris.
Donald G. Mitchell, New Haven, Conn.
*Samuel L. Mitchill, M. D., LL. D., New York.
*Hon. James Monroe, late President of the United States, Oak Hill, Va.
*Alfred S. Monson, M. D., late President of the New Haven Horticultural Society, New Haven, Conn.
*Hon. A. N. Morin, Montreal, Canada.
*Théodore Mosselmann, Antwerp, Belgium.
Baron R. Von Osten Sacken, Heidelberg, Germany.
Baron Ottenfels, Austrian Minister to the Ottoman Porte.
John Palmer, Calcutta.

*Hon. Joel Parker, LL. D., Cambridge.
Samuel B. Parsons, Flushing, N. Y.
*Hon. Thomas H. Perkins, Brookline.
*A. Poiteau, late Professor in the Institut Horticole de Fromont.
*Hon. James K. Polk, late President of the United States, Nashville, Tenn.
*John Hare Powel, Powelton, Pa.
*Henry Pratt, Philadelphia.
*William Prince, Flushing, N. Y.
*Rev. George Putnam, D. D., Roxbury.
*Col. Joel Rathbone, late President of the Albany and Rensselaer Horticultural Society, Albany, N. Y.
*Archibald John, Earl of Roseberry, late President of the Caledonian Horticultural Society.
*Joseph Sabine, late Secretary of the Horticultural Society of London.
*Don Ramon de la Sagra, Havana, Cuba.
Henry Winthrop Sargent, Fishkill, N. Y.
*Sir Walter Scott, Abbotsford, Scotland.
*John Shepherd, late Curator of the Botanic Garden, Liverpool, England.
*John S. Skinner, late Editor of the American Farmer, Baltimore, Md.
George W. Smith, Boston.
*Stephen H. Smith, late President of the Rhode Island Horticultural Society.
*Hon. Charles Sumner, Boston.
*Hon. John Taliaferro, Virginia.
*Gen. James Talmadge, late President of the American Institute, N. Y.
*Gen. Zachary Taylor, late President of the United States, Baton Rouge, La.
*James Thacher, M. D., Plymouth.
John J. Thomas, Union Springs, N. Y.
*James W. Thompson, M. D., Wilmington, Del.
*Grant Thorburn, New York.
*M. Du Petit Thouars, Paris.
*Le Vicomte Hericart de Thury, late President of the Horticultural Society of Paris.
*Mons. Tougard, late President of the Horticultural Society of Rouen, France.
*Gen. Nathan Towson, late President of the Horticultural Society, Washington, D. C.
*Hon. John Tyler, late President of the United States, Williamsburg, Va.
*Rev. Joseph Tyso, Wallingford, England.
*Hon. Martin Van Buren, late President of the United States, Kinderhook, N. Y.
*Federal Vanderburg, M. D., New York.
*Jean Baptiste Van Mons, M. D., Brussels, Belgium.
*Gen. Stephen Van Rensselaer, Albany, N. Y.
*Joseph R. Van Zandt, Albany, N. Y.
*Benjamin Vaughan, M. D., Hallowell, Me.
*Petty Vaughan, London.

*Rev. N. Villeneuve, Montreal, Canada.
*Pierre Phillippe André Vilmorin, Paris.
*James Wadsworth, Geneseo, N. Y.
*Nathaniel Wallich, M. D., late Curator of the Botanic Garden, Calcutta.
*Malthus A. Ward, M. D., late Professor in Franklin College, Athens, Ga.
*Hon. Daniel Webster, Marshfield.
*Hon. John Welles, Boston.
*Jeremiah Wilkinson, Cumberland, R. I.
Hon. Robert C. Winthrop, Boston.
*Frederick Wolcott, Litchfield, Conn.
*Ashton Yates, Liverpool, England.
*Lawrence Young, late President of the Kentucky Horticultural Society, Louisville.

CORRESPONDING MEMBERS.

A * denotes the members deceased.

*John Adlum, Georgetown, D. C.
Don Francisco Aguilar, U. S. Vice-Consul at Maldonado, Banda Oriental del Uruguay.
*Mons. Alfroy, Lieusaint, France.
James T. Allan, Ex-President of the Nebraska State Horticultural Society, Omaha, Neb.
A. B. Allen, New York.
Rev. Thomas D. Anderson, South Boston.
*Thomas Appleton, late U. S. Consul at Leghorn, Italy.
*Col. Thomas Aspinwall, late U. S. Consul at London, Brookline.
P. M. Augur, State Pomologist, Middlefield, Conn.
*Isaac Cox Barnet, late U. S. Consul at Paris.
Patrick Barry, Chairman of the General Fruit Committee of the American Pomological Society, Rochester, N. Y.
*Augustine Baumann, Bolwiller, Alsace.
*Eugéne Achille Baumann, Rahway, N. J.
*Joşeph Bernard Baumann, Bolwiller, Alsace.
Napoleon Baumann, Bolwiller, Alsace.
D. W. Beadle, St. Catherine's, Ontario.
Prof. W. J. Beal, Lansing, Michigan.
*Noel J. Becar, Brooklyn, N. Y.
*Edward Beck, Worton College, Isleworth, near London.
Rev. Henry Ward Beecher, Peekskill, N. Y.
Louis Édouard Berckmans, Rome, Ga.
Prosper J. Berckmans, Augusta, Ga.
*Alexander Bivort, late Secretary of the Société Van Mons, Fleurus, Belgium.
*Tripet Le Blanc, Paris.
*Charles D. Bragdon, Pulaski, Oswego Co., N. Y.
*William D. Brinckle, M. D., Philadelphia.
*George Brown, late U. S. Commissioner to the Sandwich Islands, Beverly.
*John W. Brown, Fort Gaines, Ga.
Dr. Nehemiah Brush, East Florida.
Arthur Bryant, Sr., Ex-President of the Illinois State Horticultural Society, Princeton, Ill.
*Robert Buist, Philadelphia.
*Dr. E. W. Bull, Hartford, Conn.
William Bull, Chelsea, England.

Rev. Robert Burnet, Ex-President of the Ontario Fruit Growers' Association, Pictou, N. S.
Alexander Burton, United States Consul at Cadiz, Spain
Isidor Bush, Bushberg, Jefferson Co., Mo.
George W. Campbell, Delaware, Ohio.
*Francis G. Carnes, New York.
*Col. Robert Carr, Philadelphia.
*Rev. John O. Choules, D. D., Newport, R. I.
*Rev. Henry Colman, Boston.
*James Colvill, Chelsea, England.
Benjamin E. Cotting, M. D., Boston.
*Samuel L. Dana, M. D., Lowell.
J. Decaisne, Professeur de Culture au Muséum d'Histoire Naturelle, Jardin des Plantes, Paris.
*James Deering, Portland, Me.
*H. F. Dickehut.
*Sir C. Wentworth Dilke, Bart., London.
*Hon. Allen W. Dodge, Hamilton.
Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.
*Andrew Jackson Downing, Newburg, N. Y.
Charles Downing, Newburg, N. Y.
Parker Earle, Cobden, Ill.
*F. R. Elliott, late Secretary of the American Pomological Society, Cleveland, O.
George Ellwanger, Rochester, N. Y.
*George B. Emerson, LL. D., Winthrop.
*Ebenezer Emmons, M. D. Williamstown.
*Andrew H. Ernst, Cincinnati, O.
*Nathaniel Fellows, Cuba.
*Henry J. Finn, Newport, R. I.
*W. C. Flagg, late Secretary of the American Pomological Society, Moro, Ill.
*Michael Floy, late Vice-President of the New York Horticultural Society, New York City.
*John Fox, Washington, D. C.
*Hon. Russell Freeman, Sandwich.
Andrew S. Fuller, Ridgewood, N. J.
Henry Weld Fuller, Roxbury.
Hon. Robert W. Furnas, President of the Nebraska State Horticultural Society, Brownville, Neb.
*Augustin Gande, late President of the Horticultural Society, Department of Sarthe, France.
*Robert H. Gardiner, Gardiner, Me.
*Benjamin Gardner, late U. S. Consul at Palermo, Sicily.
*Capt. James T. Gerry, U. S. Navy.
*Abraham P. Gibson, late U. S. Consul at St. Petersburg.
*R. Glendinning, Chiswick, near London.

Prof. George L. Goodale, Cambridge.

Charles W. Gordon, U. S. Consul at Rio Janeiro.

Prof. Asa Gray, Cambridge.

O. B. Hadwen, Ex-President of the Worcester County Horticultural Society, Worcester.

*Charles Henry Hall, New York.

*Abraham Halsey, late Corresponding Secretary of the New York Horticultural Society, New York.

*Dr. Charles C. Hamilton, late President of the Fruit Growers' Association and International Show Society of Nova Scotia, Canard.

*Rev. Thaddeus Mason Harris, D. D., Dorchester.

*Thaddeus William Harris, M. D., Cambridge.

*John Hay, late Architect of the Caledonian Horticultural Society.

*Bernard Henry, late U. S. Consul at Gibraltar, Philadelphia.

Shirley Hibberd, Editor of the Gardener's Magazine, London.

*J. J. Hitchcock, Baltimore.

Robert Hogg, LL. D., Editor of the Journal of Horticulture, London.

*Thomas Hogg, New York.

Thomas Hogg, New York.

J. C. Holding, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

Rev. S. Reynolds Hole, Caunton Manor, Newark, Nottinghamshire, England.

Fisher Holmes, Sheffield, England.

Sir Joseph Hooker, K. C. S. I., Director of the Royal Botanic Garden, Kew, England.

Josiah Hoopes, West Chester, Penn.

Prof. E. N. Horsford, Cambridge.

*Sanford Howard, Chicago, Ill.

*Dr. William M. Howsley, late President of the Kansas State Horticultural Society, Leavenworth.

*Isaac Hunter, Baltimore, Md.

*Isaac Hurd, Cincinnati, Ohio.

George Husmann, Professor of Horticulture in the University of the State of Missouri, Columbia.

*Prof. Isaac W. Jackson, Union College, Schenectady, N. Y.

Thomas P. James, Cambridge.

Edward Jarvis, M. D., Dorchester.

J. W. P. Jenks, Middleborough.

William J. Johnson, M. D., Fort Gaines, Ga.

Samuel Kneeland, M. D., Boston.

*Mons. Laffay, St. Cloud, near Paris, France.

*David Landreth, late Corresponding Secretary of the Pennsylvania Horticultural Society, Bristol, Pa.

C. C. Langdon, Mobile, Alabama.

*Dr. William LeBaron, late State Entomologist, Geneva, Ill.

G. F. B. Leighton, President of the Norfolk Horticultural and Pomological Society, Norfolk, Va.

*E. S. H. Leonard, M. D., Providence, R. I.
*André Leroy, Author of the Dictionnaire de Pomologie, Angers, France.
J. Linden, Ghent, Belgium.
Hon. George Lunt, Scituate.
*F. W. Macondray, San Francisco, Cal.
*James J. Mapes, LL. D., Newark, N. J.
*A. Mas, late President of the Horticultural Society, Bourg-en-Bresse, France.
Dr. Maxwell T. Masters, Editor of the Gardeners' Chronicle, London.
*James Maury, late U. S. Consul at Liverpool, England.
T. C. Maxwell, Geneva, N. Y.
*William Sharp McLeay, New York.
*James McNab, late Curator of the Botanic Garden, Edinburgh, Scotland.
Thomas Meehan, Editor of the Gardener's Monthly, Germantown, Pa.
*Allan Melvill, New York.
John Miller, M. D., Secretary of the Horticultural and Agricultural Society of Jamaica.
*Stephen Mills, Flushing, N. Y.
*Charles M'Intosh, Dalkeith Palace, near Edinburgh.
J. E. Mitchell, Philadelphia.
*Giuseppe Monarchini, M. D., Canea, Isle of Candia.
Édouard Morren, Editor of the Belgique Horticole, Liége, Belgium.
*Horatio Newhall, M. D., Galena, Ill.
*David W. Offley, late U. S. Consular Agent, Smyrna, Turkey.
James Ombrosi, U. S. Consul, Florence, Italy.
*John J. Palmer, New York.
*Victor Paquet, Paris.
*John W. Parker, late U. S. Consul at Amsterdam, Holland.
*André Parmentier, Brooklyn, N. Y.
William Paul, Waltham Cross, London, N.
*Sir Joseph Paxton, M. P., Chatsworth, England.
*John L. Payson, late U. S. Consul at Messina, Sicily.
*Com. Matthew C. Perry, U. S. Navy, Charlestown.
*David Porter, late U. S. Chargé d' Affaires at the Ottoman Porte, Constantinople.
*Alfred Stratton Prince, Flushing, N. Y.
*William Robert Prince, Flushing, N. Y.
P. T. Quinn, Newark, N. J.
Rev. Rushton Radclyffe, London, England.
*William Foster Redding. Baltimore, Md.
D. Redmond, Ocean Springs, Miss.
Dr. S. Reynolds, Schenectady, N. Y.
*John H. Richards, M. D., Illinois.
Charles V. Riley, U. S. Entomological Commissioner, Washington, D. C.
*Mons. J. Rinz, Jr., Frankfort-on-the-Main, Germany.
*Thomas Rivers, Sawbridgeworth, Herts, England.
William Robinson, Editor of The Garden, London.
*Dr. J. Smyth Rogers, New York.

*Capt. William S. Rogers, U. S. Navy.
Bernard Rosier, M. D., Athens, Greece.
*Thomas Rotch, Philadelphia.
*George R. Russell, Roxbury.
John B. Russell, Newmarket, N. J.
*Rev. John Lewis Russell, Salem.
William Saunders, Department of Agriculture, Washington, D. C.
*William Shaler, late U. S. Consul-General at Havana, Cuba.
*William Shaw, New York.
*Caleb R. Smith, Burlington, N. J.
*Daniel D. Smith, Burlington, N. J.
*Gideon B. Smith, late Editor of the American Farmer, Baltimore, Md.
*John Jay Smith, Germantown, Penn.
*Horatio Sprague, late U. S. Consul at Gibraltar.
Robert W. Starr, Port William, Nova Scotia.
Dr. Joseph Stayman, Leavenworth, Kansas.
*Capt. Thomas Holdup Stevens, U. S. Navy, Middletown, Conn.
William Fox Strangeway, British Secretary of Legation at Naples, Italy.
Dr. J. Strentzel, Martinez, Cal.
*Judge E. B. Strong, Rochester, N. Y.
*James P. Sturgis, Canton, China.
William Summer, Pomaria, S. C.
Francis Summerest.
*Prof. Michele Tenore, late Director of the Botanic Garden at Naples, Italy.
*James Englebert Teschemacher, Boston.
*Robert Thompson, Chiswick, near London.
*George C. Thorburn, New York.
Prof. George Thurber, Editor of the American Agriculturist, New York.
*John Tilson, Jr., Edwardsville, Illinois.
*Cav. Doct. Vincenzo Tineo, Director of the Botanic Garden at Palermo.
*Luther Tucker, Editor of the Cultivator, Albany, N. Y.
Carey Tyso, Wallingford, England.
*Louis Van Houtte, Ghent, Belgium.
*Alexander Vattemare, Paris.
*Emilien de Wael, late Secretary of the Horticultural Society, Antwerp, Belgium.
John A. Warder, M. D., President of the Ohio State Horticultural Society, North Bend, O.
Anthony Waterer, Knapp Hill, near Woking, Surrey, England.
*J. Ambrose Wight, Editor of the Prairie Farmer, Chicago, Ill.
Benjamin Samuel Williams, Holloway, London, N.
Prof. John Wilson, Edinburgh University, Scotland.
*William Wilson, New York.
*Hon. J. F. Wingate, Bath, Me.
*Gen. Joshua Wingate, Portland, Me.
*Joseph Augustus Winthrop, Charleston, S. C.

CONTENTS.