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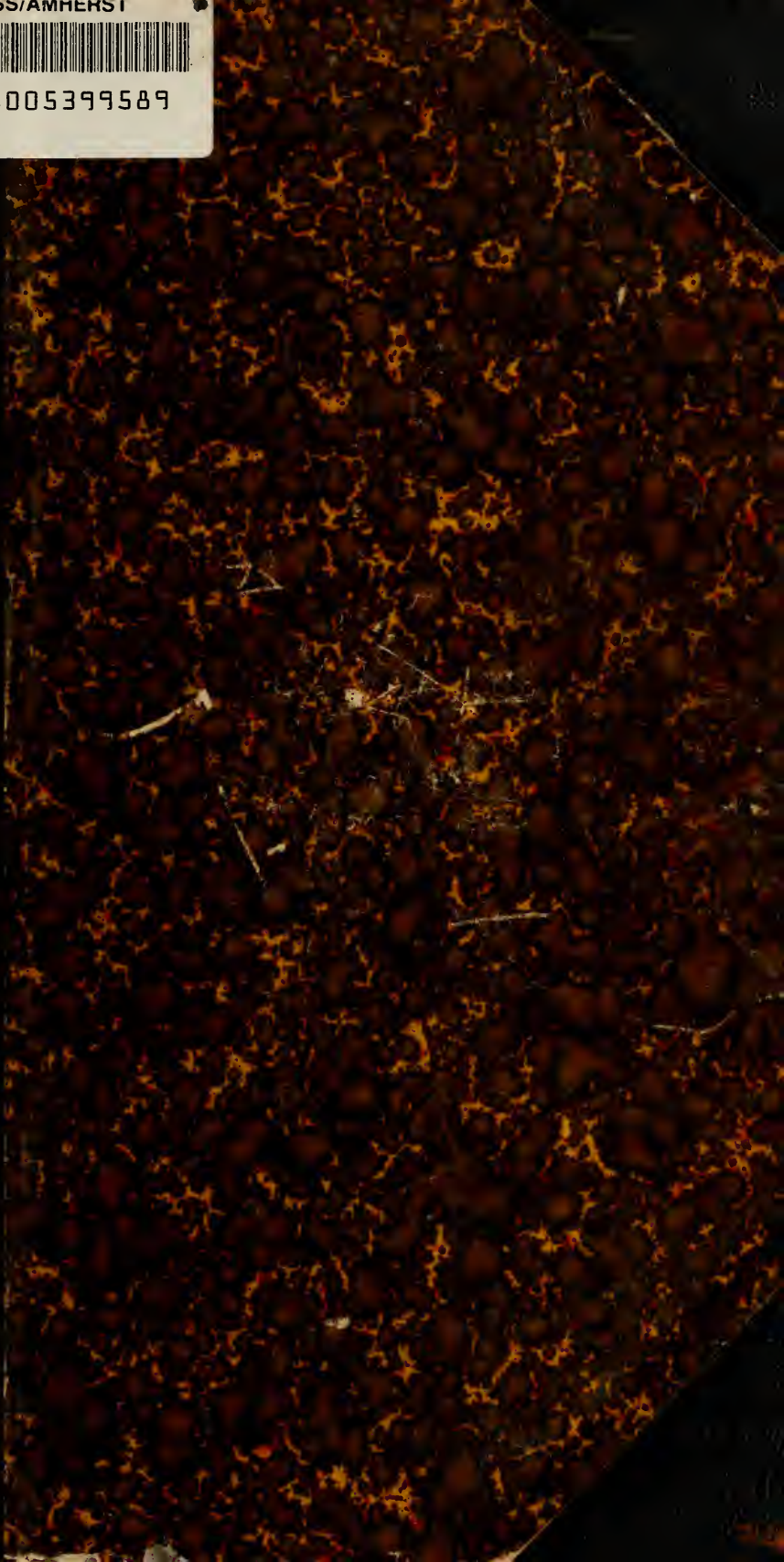

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1905

PART I

BOSTON
PUBLISHED BY THE SOCIETY
NINETEEN HUNDRED AND FIVE

CONTENTS.

The Inaugural Meeting. 7

Horticultural Papers and Discussions.

Some Recently Introduced Weeds. *By Merritt L. Fernald, Cambridge, Mass.* 11

Forest Planting for Profit in Massachusetts. *By Theodore F. Borst, Boston* 23

General Discussion on Fruit. *Opened by E. W. Wood, West Newton, Mass.* 29

An Orchard Survey and What it Means. *By Prof. John Craig, Ithaca, N. Y.* 37

Dwarf Fruit Trees. *By Prof. F. A. Waugh, Amherst, Mass.* 47

Bacteria as Fertilizers. *By Dr. George T. Moore, Washington, D. C.* 57

General Discussion on Flowers. *Opened by J. Woodward Manning, Reading, Mass.* 65

Some Aspects of Hardy Flower Culture. *By A. Herrington, Madison, N. J.* 77

The Return to Nature. *By Miss Maud Summers, Cambridge, Mass.* 91

General Discussion on Vegetables. *Opened by Warren W. Rawson, Arlington, Mass.* . . . 101

THE INAUGURAL MEETING, JANUARY 7, 1905.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

1905, Part I.

INAUGURAL MEETING.

The Inaugural Meeting of the Society for the year 1905 was held at Horticultural Hall, Boston, on Saturday, January 7, at twelve o'clock, noon.

The retiring President, Henry P. Walcott, called the meeting to order and spoke briefly of the present condition of the Society and of the work accomplished during the past year.

Some improvements in the building had been made at small expense and other changes were contemplated; and the library had been given proper protection.

They had lived one year under the new Constitution, safely, happily, and profitably, and he knew no reason why they should not go on to a prosperous future.

He stated that the President-elect, Arthur F. Estabrook, had been obliged to seek a milder climate at this season of the year, and he introduced as the presiding officer, Vice-President Walter Hunnewell.

Annual reports for the year 1904 were then presented as follows:

Report of the Board of Trustees.

Report of the Committee on Prizes and Exhibitions, John K. M. L. Farquhar, Chairman.

Report of the Committee on Plants and Flowers, Arthur H. Fewkes, Chairman.

Report of the Committee on Fruits, E. W. Wood, Chairman.

Report of the Committee on Vegetables, Michael Sullivan, Chairman.

Report of the Committee on Gardens, Charles W. Parker, Chairman.

Report of the Committee on School Gardens and Native Plants, Henry S. Adams, Chairman.

Report of the Delegate to the State Board of Agriculture, William H. Spooner.

Report of the Inspector to the State Board of Agriculture, Francis H. Appleton.

Report of the Committee on Lectures and Publication, Aaron Low, Chairman.

Report of the Secretary and Librarian.

Report of the Treasurer.

Report of the Finance Committee, Walter Hunnewell, Chairman.

It was voted that the several reports be accepted and referred to the Committee on Publication.

On motion of William H. Spooner it was voted that the thanks of the Society be presented to E. W. Wood for his long and honorable service as chairman of the Committee on Fruits.

Adjourned.

William P. Rich,
Secretary.

HORTICULTURAL PAPERS AND DISCUSSIONS.

SOME RECENTLY INTRODUCED WEEDS.

BY MERRITT L. FERNALD, CAMBRIDGE, MASS.

Delivered before the Society, January 14, 1905.

The clearing of the forest lands and the letting in of the direct sunlight is the inevitable forerunner of the farm and the village, but it is as inevitably the death warrant of hundreds of native plants. As is now well understood, a majority of our woodland species have a root structure which allows them to grow only in the moist, spongy humus of the forest or the swamp, conditions, as many of us know from practical experience, almost impossible of artificial attainment. Try as we will most if not all of us have failed to imitate with sufficient skill permanently to satisfy the plant the exact conditions which please the stemless lady's slipper (*Cypripedium acaule*), the trailing arbutus (*Epigaea*), the various species of *Pyrola*, the yellow wild foxgloves (*Gerardia*), the painted cups (*Castilleja*), or the fringed gentian; though in their undisturbed haunts these plants bloom regularly and reproduce freely.

In their own wild homes, likewise, these and scores of other species are almost as sensitive to change as when forced by man into an unappreciated state of culture. The simple cutting of the forest is to most of these plants disastrous, though such of them as are very hardy will often linger until fire has swept the cleared land and burned out the tinder-like humus. After the fire comes a complete change of vegetation, and, during the interval before the stumps are finally removed and the land turned by the plow, the clearing too often becomes a tangle of fire cherry (*Prunus pennsylvanica*), aspens (*Populus tremuloides* and *grandidentata*), and other quick-growing trees and shrubs with a liberal mixture of blackberry and raspberry bushes, fireweeds (*Epilobium* and *Erechtites*), rattlesnake-weeds (*Prenanthes*), and other coarse plants which love the open and the direct sunshine. When the final planting of the farm crop

comes, however, these sturdy plants of the burned land are quickly disposed of and rarely if ever do they make themselves troublesome in the cultivated field.

Were this routine from the primeval forest, through the clearing stage to the cultivated crop, still as simple as when Champlain observed the cultivation by the Indians of corn and beans and squashes, we should have few weeds and I should have no occasion to talk to you today. But the progress of civilization is accompanied by many drawbacks, among them the introduced weeds.

The original white settlers of New England brought with them many garden seeds, and not unnaturally they introduced with the good seeds many that were bad. So we find, according to John Josselyn in 1672, that no less than 40 species of European weeds had "sprung up since the English planted and kept cattle in New England." The naturalization of these European plants led Josselyn with unconcealed seventeenth-century credulity to ask: "What became of the influence of those planets that produce and govern these plants before this time?" Without awaiting any unusual planetary changes, however, the introduced plants mentioned by Josselyn made themselves entirely at home, and to this day these first emigrants from the European roadsides — shepherd's purse, dandelion, sow-thistle, stinging nettle, mallow, plantain, chickweed, clotbur (burdock), mullein, sorrel, smartweed, St. John's-wort, yarrow, toad-flax (butter-and-eggs), purslane, etc. — are among the most persistent followers of American civilization.

The next reliable records of weeds introduced into New England are those of Manasseh Cutler, who, in 1783, reported 66 species, among them the buttercup, "common in moist pastures and fields," white-weed or daisy, "very injurious to grass lands," and chicory, "fields in Cambridge." Since then the buttercup and the daisy have followed the white man across the Rocky Mountains and are already common on the Pacific slope, and chicory has spread over the Eastern States, with forerunners appearing throughout the West. In Bigelow's Florula Bostoniensis (1814), 83 introduced species are enumerated, and in the edition of 1840, 140 species. Gradually this list has increased until we are now

forced to number among the wild plants of New England more than 600 species which have been introduced through human agency since the first cutting of the forests.

A review of the history and spread of this vagrant class of plants presents many aspects which are well worth consideration. John Josselyn in 1672 stated that several species of European weeds had "sprung up since the English planted and kept cattle in New England," thus implying that these plants had come unbidden or at least were not purposely brought to this country. According to a time-honored tradition, based perhaps on fact, the first weed to spring up in the track of the pioneer is plantain, and on this account it has been called by some primitive races "White-man's Foot," a name of more than fanciful application; for without question the plantain and many other roadside species are spread directly by the foot of man. For some years strange and outlandish weeds have been appearing along the river below Waterbury, Connecticut. These plants, upon careful study, prove to be vagrant species from geographically remote portions of the world, and their presence along the Naugatuck River has been a mystery. Eventually, however, the whole matter was cleared when the source of these plants was traced to a factory which utilized old rubber shoes. These shoes were collected from every available source, and, before being melted for their rubber, were stripped of the cloth linings which were thrown upon a rubbish heap. These linings naturally contained seeds of innumerable plants from the roadsides of every land, and the rains and spring freshets of the Naugatuck valley gave them every opportunity to scatter and to start life anew in Connecticut soil. In this or similar ways many of the plants mentioned by John Josselyn, Manasseh Cutler, and Jacob Bigelow undoubtedly reached our shores; and these emigrants are being reinforced by almost every person who comes to us from foreign lands.

Another source of weeds which in Josselyn's time was probably as great a cause of trouble as now was impure seed. Even with the utmost exercise of caution it is apparently difficult to put up a bag of grass or of clover seed without including in it the seed of some other and undesirable plant. Newly seeded

fields have long been known to the enthusiastic botanical collector as one of the most prolific sources of strange weeds. Such is certainly the case today, and there is little reason to suppose that the field seed of colonial days was much purer. Every year brings to New England many dangerous pests through this source alone. Some of them die out after one or two seasons and cause little trouble, but others, like the king-devil weed (*Hieracium praealtum*) and its less notorious but none the less mischievous relatives have within a decade become sources of peril in many parts of New England. The king devil itself has had its full share of notoriety, particularly in the Kennebec valley, where its ravages have been so great as to stimulate a local movement (I believe unsuccessful) to secure state protection for the farmers; but some other members of the genus *Hieracium* or hawkweeds have had their vices less exposed to censure. In 1900 there appeared in a hayfield at Cutler (near Machias), Maine, a small patch — a few feet across — of the closely related *Hieracium floribundum*. The plant was looked upon merely as a curiosity, but in July, 1902, when I first saw the plant, it had spread by means of its strong and very numerous runners and in two years had utterly ruined more than an acre of grass land. The plants were then in full bloom, and the owner of the farm, lamenting the destruction of his hay crop, assured me that he would allow none of the hawkweed to mature seed, and that he would immediately have the field plowed and salted. In late August, however, I was again in Cutler and was dismayed to see that the entire acre had not only seeded freely, but that all the light feathery fruits were then scattered. Since 1902, this hawkweed has been found at several other places in New England and New Brunswick — even as far south as central Connecticut. Whether the seed which originated these new colonies started from the ruined and neglected farm at Cutler is of course impossible to say, but it is now a hard fact that *Hieracium floribundum* has a foothold in New England which will make it as dangerous an enemy to the hayfield as the king devil or the orange hawkweed (*Hieracium aurantiacum*). Other hawkweeds, *Hieracium pratense* and *H. Pilosella*, closely related to the three more troublesome species, have also made a start in New England

fields, and unfortunately there are still others of the genus in Europe which may be expected to arrive at any time.

The common and most natural practice of throwing out garden refuse has occasionally been responsible for the establishment in a community of pernicious weeds. The orange hawkweed (*Hieracium aurantiacum*) was popular in some old gardens of central Maine during the 70's under the name tassel-flower or Venus's paint-brush. It propagates very freely by runners as well as by feathery fruits, and about 1880 it began to spread slightly from gardens to adjoining fields. Once in the field it made the most of its unrestrained liberty and soon spread so generally over large areas of Maine and other New England states as to undergo a change of its colloquial name from Venus's paint-brush to the Devil's paint-brush. The live-forever (*Sedum Telephium*) perhaps better known as Jacob's ladder, was long cultivated in old-fashioned borders. It is extremely tenacious to life, and every portion of it thrown out from the garden started a new colony, and now the damp fields in many parts of New England and Canada are given over to this almost indestructible weed.

Two other sources of weeds are sufficiently important to receive our special consideration — ballast grounds and woolen mills. It has long been the custom for ships sailing from one port to another with a light cargo to make up the deficiency by loading the hold with rocks, gravel, or earth as ballast. When a port is reached from which a full cargo is to be taken this ballast is discharged and the boat is ready for its new load. The soil dumped upon ballast grounds of our principal ports contains the seeds of many species which abounded at the home port from which the ballast was obtained, and after this soil is scattered upon the flats or used as filling for a dock many strange plants make their appearance. The possible number of species to be found by the diligent searcher on the ballast lands of Boston or New York is of course very great; but most of the plants of such places, shut in by city walls and with little opportunity to spread into the open country, soon perish or are covered by a new load of ballast perhaps from a second port. To such ballast lands, however, there often come plants which, once given an opportunity, will become troublesome weeds. A coarse Euro-

pean plant, *Hypochaeris radicata*, in many ways resembling the fall dandelion (*Leontodon*), has appeared for several years on ballast lands of the Atlantic coast, where it has usually died or been killed out after a year or two in each place. In 1899, however, it appeared in lawns on Penzance and at Wareham, and now it is an abundant weed in parts of New Bedford and Dartmouth. This is an unfortunate fact, for on our Pacific coast *Hypochaeris radicata* has become a most troublesome lawn weed, and there is no reason to suppose it will be less aggressive with us.

The waste from woolen mills is always the source of foreign weeds. The habit at many of our mills has been to establish a waste heap upon which are piled all the tangles which are cut from the wool. This waste is allowed to decay and after it has accumulated it is mixed with other matter and used as a manure. Now, the worst tangles in the wool are generally caused by burs and other rough seeds which have clung to the fleece of the browsing sheep. Consequently, wool waste is in many ways an undesirable fertilizer, for when spread over a field an opportunity is afforded for the seeds which it contains to germinate, and soon there appears a strange and unwelcome crop. Such a field in Tewksbury, in 1900, produced a crop almost exclusively of two species of storksbill (*Erodium*), plants which are always fond of traveling in wool. As with ballast plants, a long list could be made of species which appear about wool waste, but the storksbills will serve as very typical illustrations of this group.

Since the clearing away of the forests in much of eastern America an opportunity to spread has been afforded for certain plants which originally grew only in the prairie belt or on the bottom lands of the Mississippi and other large water courses. These plants, fond of the open country and direct sunlight, are now showing a strong tendency to work eastward into areas which were formerly wooded. The yellow daisy or cone-flower (*Rudbeckia hirta*) was one of the first of this group to take up the eastward march across New York and New England, but now it has covered this area and extended its pioneer colonies quite to the Gulf of St. Lawrence. The purple cone-flower (*Echinacea pallida*) is beginning to appear in our fields, and

other species from the prairies or beyond — such as the buffalo bur (*Solanum rostratum*) and its near relative the horse nettle (*Solanum carolinense*) are creeping more and more into New England; but compared with the Old World species these American plants are usually unimportant weeds.

Many plants at the time of their first introduction into America seem harmless and unlikely to cause trouble; but after a period of acclimatization on the dumping grounds or in the undisturbed fence corners they suddenly reach a period of active reproduction, and in their offspring the aggressive qualities which class them as weeds are suddenly developed. Thus in 1863 a few plants of rape (*Brassica campestris*) were known to occur at Buffalo, but as late as 1882 the species though persisting was barely established. In 1887, however, it began to be troublesome in fields of central and western New York, and in 1888 it was common on dumps and rubbish heaps in eastern Massachusetts. Then it suddenly appeared as a weed of grain fields and other cultivated grounds throughout New England and eastern Canada where it is still a common nuisance. The blueweed or viper's bugloss (*Echium vulgare*) was known as an occasional waif on dumps or by neglected roadsides for nearly fifty years before it began, within the last quarter-century, to take a strong foothold in dry fields and cultivated land through eastern New York and New England.

On the other hand, some plants, which, in the past, have borne hard reputations, seem to have run their course and to have settled to a less aggressive mode of life. The henbane (*Hyoscyamus niger*), a disagreeably sticky and ill-smelling weed, which early Massachusetts botanists considered common, has now practically vanished from the New England flora, though it is abundant in eastern Quebec. Indeed, there seems good reason to assert that even the prickly lettuce (*Lactuca scariola*, var. *integrata*), which for years has been the *bête noir* of the western farmers, is now on the wane. But even though we may hope that all the weeds which are brought to us from foreign lands will eventually become as innocuous as the once common henbane, the prospect of waiting for 600 species and their successors to run their full course is not a pleasing one; and some energetic methods must be employed to check the progress of new weeds.

The question is often asked, why it is that so many of our noxious weeds are of European origin while our own native species are comparatively innocent of offense. This question is of very great interest. Originally the forested areas of northern and central Europe were not unlike our own wooded country, and the herbaceous plants of the leaf mold were similar to and often identical with our own woodland species. For centuries, however, the cutting and recutting of the forests and the tremendous growth of towns and of closely cultivated land has left most of these species practical outcasts, hiding here and there in cold mountain regions and swamps. This virtual deforesting of large tracts of Europe and the consequent destruction of the fastidious woodland species has very naturally increased the opportunity for development of genera and species which thrive best in the open; and so we now find spread widely over civilized Europe the numberless species of such characteristic genera as the hawkweeds (*Hieracium*), the thistles (*Cirsium*, *Carduus*, etc.), the poppies (*Papaver*), mustards (*Brassica*, *Sisymbrium*, etc.), vetches (*Vicia*, etc.), bedstraws (*Galium*), and star thistles (*Centaurea*). Life for hundreds of generations along the roads and fence rows, on the outskirts of civilization, has developed in these plants a vigor and hardiness and an indifference to surroundings strikingly in contrast with the sensitive constitutions of the woodland species they have now so thoroughly supplanted. These hardy races, then, developed as the result of long competition in fence corners and hedgerows of Europe are able to cope with conditions which are practically impossible to the less sturdy types developed along our New England rivers. This point is well illustrated by the common plantain of our roadsides. In all its characteristics this plant is exactly the *Plantago major* of Europe, and throughout America it is this typical thick-leaved European plant which abounds by roadsides. A thinner-leaved variety of *Plantago major* is common in the alluvium and along the river beaches of northern New England and Canada, but, so far as our observations show, this thin-leaved native plant never deserts the river bank, while its less fastidious European representative is quite at home in the precarious surroundings of busy roadsides and beaten paths. Similarly the yarrow, self-heal,

tansy, tufted vetch, and many other European plants have in America indigenous representatives; but these American plants, adapted through long centuries to their habitats along woodland rivers, never show an inclination to take to the fields or the roadsides, although plants imported from Europe and to all appearances identical delight in the cultivated fields and the haunts of man. In other words, as already stated, while the American plant, unaccustomed to the ways of civilization until the recent and still unfinished clearing of the forest, is unable readily to cope with changed conditions, the European plant, through a long life of competition with man, has developed a hardy stock which is undaunted by the hardships of the roadside and the inhospitable farm.

This point is further emphasized by a comparison of our New England flora with that of Great Britain. Of the species growing in the British Isles only above an altitude of 3,000 feet, i. e., in the mountain country where the primitive vegetation is but little disturbed, 64 per cent are also native in the cold forests or on the mountains of northern New England. But of the species which occur everywhere at low altitudes and in the thickly-settled and closely-farmed districts of England only 23 per cent are native to New England as well, while more than 50 per cent have become established in New England as weeds. Opposed to this we have the striking fact that in temperate Europe barely 1 per cent of the wild plants have been introduced from the United States.

Besides the hardy character of the plants which come to us as weeds from Europe there is another factor which must be borne in mind. Any organism transplanted from its original surroundings to a new but favorable region is inclined to increase in vigor and powers of reproduction. The case of the rabbits in Australia is now classic. Our own experiences with the English sparrow, the brown-tail and the gypsy moth are examples nearer home. The same principle holds with weeds. In Europe the marguerite or daisy is rarely seen except in the gardens, but, once started in America, it has overrun the Eastern States and is rapidly taking as strong a hold in the West. A famous case—one of the few in which we have squared accounts with our European cousins—

is that of *Elodea canadensis*, known in Europe as "water-pest." At home, in America, this is an insignificant water-plant ordinarily overlooked except as it occurs in reservoirs. But a few plants, spreading from an aquarium to the River Cam in England, soon clogged the stream, and from this and perhaps other similar sources it has spread over England and much of continental Europe, everywhere developing so vigorously as scarcely to resemble the slender unassuming American plant from which it sprung. In return, however, the European water-cress introduced into New England brooks behaves with as little reserve, and often the brooks of which it has taken possession become so clogged by it as to cause serious damage. Another aquatic, the water chestnut (*Trapa natans*), introduced some years ago as a curiosity from Asia, was placed in the Concord River, where it has become such a nuisance that it is necessary to weed it out of the Sudbury River above its junction with the Assabet.

Besides the methods of transportation from place to place which we have already discussed, there is another which is at present particularly instrumental in the rapid spread of weeds. I refer to the railroad. Besides carrying freight and passengers, the ordinary train transports uninvited the fine seeds of many plants from one part of the country to another. No better botanizing ground can be asked by the person interested in novel weeds than the freight yards of a trunk railroad, especially if the employees of the road have been negligent or thoughtless about keeping down weeds. As in case of the plants of ballast lands and of recently seeded ground many of the newly introduced plants quickly perish; but others, with the slightest encouragement, become permanent elements of the flora and take every advantage of the railroad as a means of travel. The progress of many bad weeds is readily traced to the railroads, and at the present time roads entering New England from different directions are bringing to us as many different vagrants. In the late 70's a coarse yellow-flowered plant, *Senecio Jacobaea*, familiarly known by the suggestive name "Stinking Willie," appeared as a waif on ballast at some points along Northumberland Strait in eastern New Brunswick and adjacent Nova Scotia. By 1884 it had begun to spread along the local railroads; and now it has

followed the Intercolonial and the Canadian Pacific across New Brunswick and Nova Scotia, and has even reached the Boston and Maine system near Portland. This plant is charged in the Maritime Provinces not only with being an enemy to the farmer, but with causing asthma and hay fever, so that, in spite of its showy display of yellow, it is an unwelcome traveler along the railroads. Other railroads entering New England from Quebec, New York, and other large centers are bringing with them their full share of vegetable vagabonds, for it is an interesting fact that the different large ports—Boston, New York, Philadelphia, Halifax, Quebec, etc.—have become centers for the establishment of very different Old World plants.

It is true that many of the foreign plants which are rapidly establishing themselves in New England are of certain economic value, and much has been done to raise the self-respect of these plants by the recent publication by the United States Department of Agriculture of a bulletin (Farmers' Bulletin No. 188) on the medicinal uses of some of them. But at best they are not a satisfactory crop, and as weeds they occupy space which should be put to better service.

Briefly summarized, the points I have attempted to make clear are, that the cutting away of forests produces conditions which are fatal to many woodland species, but which give an increased opportunity for development to plants which thrive best in the open. In the occupancy of this newly opened land the coarse and vigorous plants of Europe bred through long contact with civilization have a tremendous advantage over the less aggressive American species or varieties. These European weeds reach us in various manners, the seed often clinging to the clothes or the shoes of the traveler, or finding their way into field or garden crops. Others have originated from garden plants carelessly allowed to spread to adjacent fields, while many come to us in ship ballast or in the wool sent for manufacture at our mills.

The problem presented by these plants is a serious one. There is no need for me to emphasize its importance to the practical agriculturist, but I may be permitted to call attention particularly to a point which appeals immediately to the botanist and the lover of nature. That is the danger which this rapid encroach-

ment of aggressive and for the most part unattractive plants forces upon our own more sensitive and more attractive natives. The latter, as already sufficiently emphasized, are often fastidious as to the soil and conditions in which they grow; the former ready to thrive in almost any surroundings. On some of our northern rivers which were early followed by the Jesuit explorers, aggressive European weeds — the bladder campion and the mugwort, for instance — which were probably introduced in the blankets of the *voyageurs*, have now covered large areas and choked out the native vegetation. In central Maine, the present stronghold of the orange hawkweed or devil's paint-brush, that showy and energetic plant has already entered mossy cedar swamps and is beginning to crowd from their native knolls the mitre-wort, *Moneses*, and other delicate species.

The remedy for this weed evil lies primarily with such an organization as the Massachusetts Horticultural Society. Like the problem of the gypsy moth and the brown-tail moth its solution must depend upon coöperation. Isolated endeavors to keep out aggressive and uninvited occupants of our land are only of minor value; but if the problem can be taken up and its solution pushed by a wide-reaching organization such as yours much may yet be accomplished in checking what has become a menace to every landowner.

FOREST PLANTING FOR PROFIT IN MASSACHUSETTS.

BY THEODORE F. BORST, BOSTON.

Abstract of an illustrated lecture delivered before the Society, January 21, 1905.

After briefly referring to the importance of forests and how the indiscriminate cutting of the past has made it impossible for nature to much longer supply our needs, Mr. Borst took up the problem of showing where forests should be planted, how seedling trees are raised in a nursery, how a young forest is properly planted, and how a plantation should be tended for profitable returns. Good profits from forest culture were shown.

He said that it is a matter of common knowledge that prices of all forest products, especially wood of the better kinds, have been very rapidly rising, and as these advanced prices are occasioned by a scarcity of desirable timber there is no reason to believe that prices will ever be lower; in fact, everything points toward much higher prices in the future. Just two weeks ago the President of the United States, through an address before the American Forest Congress held at Washington, called the attention of the American people to the grave problems now confronting us by the rapid destruction of our forests. These forests were once thought inexhaustible, but at this congress, as never before, the leading interests depending upon forest products, namely: the lumbermen, the railroads, the mining interests, paper manufacturers, the box and cooperage manufacturers, the furniture manufacturers, and all woodworkers and users in general, did through able representatives of their various interests cry aloud their needs for wood materials. The area formerly covered with valuable timber has been much reduced, and the regrowth now taking place on other lands is upon culls left standing in the lumbering of the past. As nature no longer will

supply our demands we must by artificial means stimulate and direct nature's forces in timber production.

There are many thousands of acres of land in Massachusetts that are absolutely waste. Much of this land is either unfit or unnecessary for agricultural purposes. Everywhere we note abandoned, brushy, wornout pastures, impoverished ploughland, deforested tops of ridges, steep, rocky hillsides, poor, loose, sandy soil, odd corners too expensive to plough and cultivate; yet many of these waste lands could at small expense be made to yield valuable timber crops. Mr. Borst showed a series of views of such deforested lands, burned over areas, etc., both from the surface and sectional cuts. These pictures made clear what poor lands white pine and other valuable trees can thrive on. In discussing how many trees to plant, the size of plants to use, and the spacing between the trees, it was shown how very dependent the answer to these questions is on the nature of the land to be forested. It was shown that upon areas where more or less voluntary tree growth exists the supplementary planting necessary to fill the open places was very quickly and cheaply done, sometimes costing as low as four or five dollars per acre, using white pine trees for this purpose. Where the entire area must be planted the trees are set about five by five feet apart, requiring 1743 trees per acre, and may cost from seven to fifteen dollars per acre. The size of plants needed determines much the cost of the plantation. The size needed is very dependent upon soil conditions and the nature of growth covering the land. Brushy, blueberry, and sweet-fern lands require, for instance, the use of three-year old transplanted stock, while open, exhausted pasture lands can frequently be planted with two-year-old seedlings. Where conditions permit the use of chestnuts, acorns, or hickory nuts, the cost of planting per acre may be only two or three dollars. Some 18,000 acres of waste land have already been artificially forested in this State. A few of such areas have recently been lumbered at a net profit of over six per cent on the entire investment. If the planting which was done forty, fifty, and sixty years ago has proved profitable certainly the planting we would do today, which would come into the market forty, fifty, and sixty years hence must prove even more profitable; especi-

ally when there is every indication that timber prices will double or perhaps treble themselves before that time.

It was illustrated at length how tree seeds are collected, how a sandy loam soil is selected for a nursery, and how the same is laid out, ploughed, harrowed, etc., for raising young trees. The seeds are soaked in warm water, poisoned for preventing mice from eating them, and then are carefully sown in drills in a nursery bed. Careful tending is necessary until the seeds germinate and are one year old. The seedlings remain in seed beds two years. They are then about six inches high and may be set directly into the field, or if larger, more stocky plants are needed, the seedlings are transplanted into nursery rows where they may remain one or two years longer. Views were shown illustrating how the seedlings are taken up, transported to the land to be planted, and how the men plant the same. Each two men of a crew work together, one man making the holes while the second man sets the trees. The details of how to properly and quickly set these trees were shown. Mr. Borst states that by his method each man employed in the planting will set more than 700 trees in nine hours. One crew of sixteen men and a foreman have set considerably more than 16,000 trees in nine hours. Under fair conditions, using two-year-old seedlings, two men working together will plant from three-quarters to one acre a day. Great care is necessary to obtain good stock, as frequently poor trees are delivered and the planting is correspondingly disappointing. One difficulty in the way of the general tree planting is that proper trees for forest planting are not readily obtainable at sufficiently low prices. For small plantings it may be advisable to transplant small seedlings, say from six to twelve inches high, from open pastures, but usually for plantations larger than five or six acres, the additional cost for labor, etc., necessary to collect and plant such stock is not compensated for. Also the success of such planting is often not encouraging. Mr. Borst carried his audience through the various stages in the development of a planted grove and showed that there is no essential difference in the planted forest and one sown by nature. The foresters' artificial method of planting is necessary when the seed trees have been destroyed or when the area has not been completely

reclothed. It is often cheaper and more satisfactory to plant a forest than to depend on nature's sowing. White pine, chestnut, hickory, ash, oak, maple, and tamarack are among the best trees for planting in Massachusetts, but under some circumstances other trees might be preferable. Mr. Borst has during the past four years made plans for and supervised the planting of considerably over one million trees in Massachusetts, and many more trees are now being grown in nurseries for forest plantations. This year seedlings can be furnished cheaper than ever before. Data from actual experience was presented to show the cost of reforesting lands of different types, and several planting plans were discussed. If the planting is done on sufficiently large scale, say 25, 50, or 100 acres, the cost of planting including the young trees may be from five to fifteen dollars per acre. Ten dollars per acre has frequently been the cost for white pine planting. The proper age and the manner in which to prune and thin a forest was shown. If a stand is thinned too early or thinned too severely much injury can be done, as the trees will thereby become low crowned and produce knotty timber; and over-thinning also endangers a crop to windfall. It was shown that a mature white pine stand can be lumbered, and at the same time the ground be naturally reset with young pines. Tables were shown giving the volume of timber produced by white pine per acre in this State and also data from European planted white pine forests. Uncared for white pine forest in Massachusetts may produce in sixty years about 30,000 feet of timber, B. M., while under forestry treatment the European figures show that 50,000 feet can readily be produced on one acre during the same period of time. White pine plantations have been figured to yield a net annual return of $1.15 per acre paid at the expiration of forty years in addition to four per cent compound interest on the money invested. Under a different calculation, using all costs, it is estimated a return of about $2.25 per acre per year for forty years from the time of planting to the time of cutting is obtainable. This estimate is corroborated by actual experience. These returns are certainly very satisfactory, considering the fact that it is secured from land which is almost useless for any other purpose and which, without a timber crop, would be a source of

constant expense in taxes. A timber crop not only gives a return on the money invested, but it makes productive the capital locked up in the land. These returns are figured on the yield obtainable without pruning, thinning, etc. If forestry treatment is given the returns should be higher. Again, these profits are figured on prices of stumpage prevailing today. The future profits will be higher in proportion to the advance in stumpage values.

Timber culture for profit is strongly commended to landowners, especially where lands are being held that are producing no returns whatever. One great advantage of tree culture is that the farmer and his regular labor can be readily taught to do the work and that very little attention save protection is needed after the crop is once started.

Mr. Borst's address was well calculated to demonstrate the entire practicability of forest culture for profit.

Discussion.

Benjamin P. Ware said there was no question that the subject of forestry was of the greatest importance. The lecturer had treated it on a large scale and he had noticed in some of the illustrations that the ground was covered with men, as many as thirty in some instances. Now that method was too costly for the average farmer.

He believed in following nature's method, that of scattering the pine seeds broadcast, which required no labor, no artificial appliances, no seedlings, and no great cost.

He knew of a bushy, rocky tract of land that had been well covered with a good growth of white pine by simply scattering seeds over it.

In Germany owners of land were obliged by law to cultivate a certain amount of forest trees and he urged the everyday farmer to go into forest planting.

Mr. Borst replied that broadcast seed sowing was wasteful and that the seeds were liable to dry up or to be eaten by birds and

was altogether too uncertain in its results. The methods he recommended were the most profitable in the end.

Aaron Low said he recollected two pastures now completely overgrown with a thick growth of pine of nature's own sowing.

Kenneth Finlayson inquired as to the most suitable time to plant pines.

Mr. Borst said that the best time is in the spring just after the last frost is out of the ground. That is one of the advantages of forestry; it can be done before the spring work comes on. He said, in answer to questions, that the cost of seedlings two years old was six dollars a thousand and that they should be planted five by five or six by six feet apart. The cost per acre would depend a good deal upon conditions but would be about nine to fifteen dollars. A planting plan was the first thing to arrange. He further stated that the chestnut would give returns in twenty years, and that unimproved lands planted to forest growth would pay interest on the amount of taxes paid out by the owners.

A gentleman remarked that a discouraging feature of white pine growing was the damage done by the pine tree weevil which destroyed the leader in young trees, and asked if any remedy for this trouble was known.

Mr. Borst said that he knew of no preventive of this evil, but suggested spraying and the destruction of badly infested trees.

In reply to a question he said that the white pine will not do well near the sea.

GENERAL DISCUSSION ON FRUIT.

OPENED BY E. W. WOOD, WEST NEWTON, MASS.

Saturday, January 28, 1905.

A general discussion of the subject of the cultivation of fruit was held at Horticultural Hall today. James H. Bowditch, of the Committee on Lectures, presided and introduced as the first speaker E. W. Wood of West Newton, a member of the fruit committee of the Society for twenty-five years. Mr. Wood spoke in part as follows:

The subject of today's discussion is one in which this Society has always taken an active interest and it has always been an important feature in its work. The original organization of the Society was due to the fruit growers of Boston and its suburbs.

The two leading fruits of New England are unquestionably the apple and the pear, and in no part of the world can the apple be grown more successfully than in New England. It is well known that the quality of this fruit improves in flavor and color as we go north, and Maine grown Baldwins bring a higher price than those grown in Massachusetts or further south. We are not keeping up with the Maine growers in the care and improvement of our orchards and in packing for the market.

Western grown apples do not have the keeping properties of those grown in this section of the country. There they have no apples that will keep all through the winter as do ours in New England where we may have them continually from August to June.

There seems to be a tendency towards the evening up of the apple crop by a more uniform production which if continued will eliminate the off year and enable our orchards to produce a crop every year.

In growing for the market it is important to know what to

grow and what varieties to set out. Unquestionably the Baldwin is the best for our section.

The late Mr. Hayes, a former president of this Society, had prepared land for six hundred apple trees but was in some doubt as to the kinds to plant. To aid him in deciding this important matter he consulted with Mr. Curtis, at that time a prominent produce merchant of Faneuil Hall Market, Boston.

He stated the case to Mr. Curtis and desired his advice. Mr. Curtis asked him if he intended setting out his orchard for market purposes. "Certainly," replied Mr. Hayes. "And you are going to set out six hundred trees." "Yes." "Well, then," said Mr. Curtis, "if you are going to start an orchard of six hundred trees in this section of the country I would advise that you plant five hundred of them Baldwins." "And what shall I plant for the other hundred?" inquired Mr. Hayes. "You say that your orchard is intended wholly for commercial purposes," said Mr. Curtis. "Yes," replied Mr. Hayes. Mr. Curtis considered the question for a moment and then answered, "Set out the other hundred in Baldwins." This advice was the result of the experience of many years in the apple market and is not less true at the present day.

Next to the Baldwin can be recommended the Astrachan, Williams, Gravenstein (the queen of fall fruit), the Rhode Island Greening, and the Hubbardston. These varieties with the Baldwin will extend over the whole season and give us apples in perfection from August to June.

There are also many local varieties of apples which it is well to grow for a local market. Of these may be mentioned the Palmer Greening and the Sutton Beauty, favorites in Worcester County, and the McIntosh Red for new cultivation. This latter variety originated in Canada and is of the Fameuse type. It is of white flesh, good flavor, and keeps from November to March, and he would add it to an orchard in preference to any other variety recently introduced into this section of the country.

The influence of this Society and the value of its exhibitions are manifest in the changes brought about in the varieties of fruit grown. Here fruit growers meet to exhibit the products of their gardens and to discuss the good or bad points of the objects

exhibited; with the result that the best only survives the test to which it is subjected. It is amusing sometimes to notice how one's specimens of fruit, which seem so large and fair in the owner's home, shrink upon being placed upon the exhibition tables.

Mr. Wood said that he knew of nothing today upon which a young man could enter with more hope of success with the least outlay of money than the cultivation of apples. In all the abandoned farms he had seen not one had a thrifty orchard upon it. Even if one should not live to see the results it will add to the value of the farm in the closing up of an estate, and there is nothing that will help the sale of a farm better than a prosperous orchard. How many orchards are seen everywhere showing neglect and want of care, and treated only as an incidental crop.

At a farmers' meeting a few years ago in a town in the central part of the state one of the auditors arose and said that the farmers in that section had been advised to grow apples; now they would like to be told how to sell them. It was a year when the crop was large and the returns discouragingly poor.

Dr. Fisher, who was at the meeting, was asked to reply. He said that he had grown apples for thirty-four years and had always received a satisfactory price. He had always found that good quality fruit brought a good price. He grew only three varieties, Hubbardston, Rhode Island Greening, and Baldwin. He thinned his fruit and had at the time two hundred barrels which he proposed to sell the first of February. The market price for ordinary apples was then seventy-five cents to one dollar and twenty-five cents a barrel.

Mr. Wood met the Doctor the next year and asked him what he obtained for his apples. Dr. Fisher replied that he sold his Rhode Island Greenings in New York, where there was a better market, for $3.25 per barrel, and his Baldwins and Hubbardstons in Boston, for $3.00.

There is no crop that can be grown with so little fertilizing and with so little expense in cultivation as the apple, and there is no reason why a farmer cannot have a good crop and find a market at a good price.

To get good fruit it must be thinned in early summer. It may

seem wasteful of fruit and time but it pays to do it for those left to ripen will be larger and therefore worth more money. There is no trouble in marketing good apples. Satisfactory locations for orchards can be found within twenty-five miles of Boston and even within ten miles, thereby bringing the grower into close touch with a market. In the earlier years of an orchard the ground between the trees can be used for the cultivation of vegetables.

A half-million barrels of apples were exported from Boston the past season.

The next important fruit crop in New England is undoubtedly the pear. The pear is a more constant bearer than the apple and comes into bearing more quickly.

It is of no use to set out dwarf pears in a light, dry soil. The quince stock upon which a dwarf is produced requires a strong, moist soil, and where it can be grown in a proper location the dwarf varieties produce better fruit. It is a custom in planting a pear orchard to set out every other tree a dwarf, twenty feet apart, and after the standards have attained the proper size to cut out the intermediate dwarfs. A dwarf, however, can be readily converted into a standard if found desirable.

Unfortunately we have too many varieties of pears and, though Marshall P. Wilder forty years ago showed at one of our exhibitions 417 varieties and Charles M. Hovey 360, yet the desirable varieties could be counted on one's fingers. Fifty years ago the question was asked at one of these meetings, "What is the best variety of pear to grow if only one could be planted?" President Walker said, "the Vicar" and Mr. Wilder agreed with him. Now no one thinks of growing it.

At present the most desirable varieties are the Bartlett, Sheldon, Seckel, Bosc, Clairgeau, Dana's Hovey, and Anjou.

The Anjou I would not recommend so strongly for in recent years it seems more liable to disease. The Dana's Hovey is undoubtedly the finest pear, in my opinion. It is a remarkably good pear, a seedling from the Seckel, and comes at a season when there is less competition. It does not appear to be very generally cultivated, but no mistake would be made in growing this pear for home use. It brings the highest price of any pear

in the market. It had been sold, in the speaker's remembrance, for seven dollars a bushel; now the average price is from three to three and one-half dollars.

The Clairgeau pear is a pear that looks well and has been a popular variety in the Boston market in years past, but it is a pear that no grower for home use should have in his orchard.

The next fruit in importance is the peach, although it must be admitted that it is a rather uncertain crop. There appears to be no variety exempt from the attacks of disease, and no variety free from the danger of winter killing. However, the growers in Connecticut seem to succeed very well by frequent renewals of their orchards.

James H. Bowditch remarked that no fruit was so satisfactory as good apples, and he could confirm Mr. Wood's opinion of the quality of the McIntosh Red, and also that the Northern Spy was very good.

Joshua C. Stone expressed the opinion that twenty-five miles from Boston was too near to start an apple orchard; go a hundred, he said, or go to New Hampshire where land could be had for a dollar an acre. Anyone who sets out an orchard within ten miles of Boston will regret it, for in time the land would be more valuable for other purposes than apple growing. He said that some of the finest apples in the market today came from Oregon. He disagreed with Mr. Wood in the manner of packing fruit, and said that it was in accordance with approved business methods that the best should be put on top in order to attract the attention of the buyer. The man who packed his apples with the big ones at the bottom was too good for this world.

Rev. Charles L. Hutchins said that he did not agree with the previous speaker in regard to planting an orchard so far from the city. He had already a good-sized orchard at Concord and intended to set out several hundred more trees, and came to the meeting today for the purpose of getting information on the subject. While he did not himself expect to make much commercially out of his orchard it would benefit his children.

If we can't have large families, as President Roosevelt advises, we can have beautiful trees which, he thought, was the next best

thing. He had come to the meeting with several questions to ask:

First: Are we following the best method in packing fruit in barrels?

Second: in regard to the cultivation of an orchard on a hillside, What can be done to prevent the humus from being gradually washed down to the lower levels, if cultivation is practised?

Third: We are told in grafting to get the very best scions possible, but how shall we obtain them?

Fourth: I would like to ask if it would do to set out a new orchard on the site of one seventy-five years old. If so, is it better to plant at once or wait a year or two: to use the same holes or make new ones?

In partial answer to these queries Mr. Wood said that at the Agricultural College at Amherst there was an orchard situated upon a rather steep hillside. It was cultivated crosswise and a cover crop of grass or cow peas sown which prevented washing in the spring, after which it was plowed in.

Varnum Frost said that it was not well to grow new trees in an old orchard.

Aaron Low said in regard to the question of planting new trees in an old orchard that it was the height of folly to do it. The old orchard had sapped the vitality of the land. Regarding the packing of fruit and vegetables he had found in his experience that it paid to pack them correctly. He had made a practice of packing a few apples of extra quality for which he readily obtained the price he asked for them. Their quality made them worth it. Last year he had lost the greater part of his crop of peaches and plums on account of the severity of the winter, and it will be necessary to spray our trees a number of times during the season to protect them from insects and fungi.

Benjamin P. Ware gave an account of his method of keeping apples in his cellar until June without artificial refrigeration. He placed them in open barrels or large boxes and was careful to handle them as little as possible and to keep the cellar cool by closing the windows during the day and opening them at night until freezing weather approached. He had no difficulty in keeping apples for the June market by these means. He had

experienced some trouble in growing Gravensteins; he had grafted ten or twelve trees to this variety but could not get them to bear and he had not produced a barrel from the whole lot since grafting them over. He asked for the experience of others on this point.

Mr. Stone replied that it is impossible to graft the Gravenstein with success. The only way is to grow it from young trees.

Christopher C. Shaw stated, regarding the Gravenstein apple, that had he set out this variety it would have been many dollars in his pocket. He had grafted over many trees to Gravensteins and felt he had made no mistake and the grafted trees did well with him. He recommended also the Danvers' Winter Sweet and he believed the McIntosh Red to be the coming apple. It was a good grower, a good keeper, and of good flavor. It had one trouble, a tendency to scab, but he thought that could be controlled by spraying. He was sure that in a few years it was to be the money getter of New England apples.

Wilfrid Wheeler said that the orchard of Samuel Hartwell in Lincoln was grown in grass land, but the grass after cutting was left on the ground as a mulch.

Mr. Wood remarked that nine-tenths of the orchards of New England are grown in sod. The orchard of Dr. Fisher at Fitchburg was grown thus but the grass was cut three or four times a year and left on the land. He thought that the fruit gradually deteriorated under sod culture.

William P. Rich said that there had been in recent years much discussion among fruit growers upon the question of orchard tillage, and that the weight of opinion seemed to be in favor of open cultivation and the sowing in the early summer of a cover crop to be plowed under the succeeding spring.

Mr. Wood added that fruit growers should study the markets in which their fruit is to be sold. Varieties are not equally popular in all the cities. In Worcester the Sutton Beauty and the Palmer Greening will bring prices that make these varieties especially desirable to grow. The McIntosh brought the highest price in Boston last year of any apple sold and it is bound to become popular in this market on account of its beauty and excellent quality.

AN ORCHARD SURVEY AND WHAT IT MEANS.

BY PROFESSOR JOHN CRAIG, CORNELL UNIVERSITY, ITHACA, N. Y.

Abstract of an illustrated lecture delivered before the Society, February, 4, 1905.

The purposes. The purposes of an orchard survey are manifold:

1. To correlate geologic and soil characters and conditions.
2. To compare successes and failures and ascertain underlying causes.
3. To investigate methods of orchard management and to determine the influence of each.
4. Finally, and in short, to collect and tabulate such a mass of data upon practical apple growing as will place many moot questions beyond the range of peradventure, and furnish indisputable evidence for the assistance of those who are horticultural leaders and teachers.

A General View of the Apple Industry.

"The * value of the orchard products on the farm has increased from 33 cents per capita in 1850 to $1.11 per capita in 1900. If all fruits are included the value would be about fifty per cent greater: the amount for 1900 being $1.74 per capita. Much more than these amounts must be spent by the consumer, for the transportation, commissions and profits increase the cost several times. A larger proportion of the crop may now be exported, but the great change has been in the creation of a home demand for fresh fruit, such as does not exist in any other country. The great fruit market of the world is the American workman, and his staple fruit is the apple.

* From Bulletin 226, Cornell University Experiment Station.

Relative increase of population and of value of orchard products from the census reports.

	Population	Per cent of gain in 10 years	Value of orchard products	Per cent of gain in 10 years
1850	23,191,876	——	$7,723,186	——
1860	31,443,321	35.6	19,991,885	159.0
1870	38,558,371	21.3	38,000,000	90.0
1880	50,155,783	32.4	50,876,154	33.9
1890	——	Gain in 20 years	——	Gain in 20 years
1900	75,568,686	52.1	83,751,840	64.6

Relative rank in fruit production of the ten leading fruit-producing states, from the census of 1900.

	Orchard Products.			All Fruits.		
	Total value	Per cent	Rank	Total value	Per cent	Rank
United States	$83,751,840	100.0	—	$131,423,517	100.0	—
California	14,526,786	17.3	1	28,280,104	21.5	1
New York	10,542,272	12.6	2	15,844,346	12 1	2
Pennsylvania	7,976,464	9.5	3	9,884,809	7.5	3
Ohio	6,141,118	7.3	4	8,901,220	6.8	4
Illinois	3,778,811	4.5	5	5,455,213	4.1	6
Michigan	3,675,845	4.4	6	5,859,362	4.5	5
Indiana	3,166,338	3.8	7	4,630,169	3.5	7
Missouri	2,944,175	3.5	8	4,309,813	3.3	8
Virginia	2,662,483	3.2	9	3,515,475	2.7	10
New Jersey	2,594,981	3.1	10	4,082,788	3.1	9

The magnitude of the apple crop. Of the total number of orchard trees reported in 1900, 55 per cent were apple and these produced 83 per cent of the total number of bushels of fruit reported. The average production of apples is about two to three bushels per capita.

"Of the crop of 175,000,000 bushels in 1899, the States of New York, Pennsylvania, and Ohio produced nearly 69,000,000 bushels, or over 39 per cent of the total crop in the United States. New York justly claims first place in the quantity and quality of her apple crop. Apples are grown in nearly all parts of the state, but it is in the lake counties, Niagara, Orleans, Monroe, and Wayne that the industry has been most extensively developed. In 1900 fifteen states outside of New York had a greater number of apple trees than the combined number in these four

counties; but only nine of these states gave a larger crop in 1899. No other county in the United States produced as many apples as any one of these. Only four counties, one in Illinois, one in Missouri, and two in Arkansas had as many trees as any one of these."

How the work was conducted. An inspector was sent into the field equipped with a note book, soil auger, and camera. His note book contained blanks prepared for collecting information on age, fertilization, tillage, spraying, past and present troubles, yields, markets, and prices. The soil and site of the orchard were examined with a view of correlating present condition with aspect and topography. About five hundred orchards were critically examined and the following results were secured.

Some Important Findings.

Influence of tillage. The following table shows the results from different methods of soil treatment, and emphasizes the benefits of cultivation over sod treatment:

Yield in bushels of tilled and sod orchards. Average for the entire county of trees set before 1880. Orchards all well cared for.

	1900			1901		
Treatment	No.	Acres	Average yield	No.	Acres	Average yield
Tilled 5 years or more	25	175¾	348	22	177¼	99
Tilled most years	22	181	353	21	188	38
Sod most years	24	209	260	25	244½	72
Sod 5 years or more	25	206	224	31	249	45

	1902			1903			
Treatment	No.	Acres	Average yield	No.	Acres	Average yield	Four year average
Tilled 5 years or more	38	401¾	311	23	345	326	271
Tilled most years	38	261½	339	16	99½	249	245
Sod most years	46	365½	235	15	122	257	206
Sod 5 years or more	47	356½	269	22	157¾	263	200

Mr. Warren, who had charge of the field investigations, asks, "Does tillage pay?" and continues: "This table does not show that every sod orchard should be tilled, but it does show that it

would pay to till the average one. If a sod orchard is giving good yields, and if the trees are making sufficient growth to keep up their vitality, it may be desirable to keep it in sod. By the liberal use of barnyard manure or straw mulch, an orchard may be kept in good condition without tillage. The trouble is that so many do not receive enough of either. The same results may be accomplished with much less manure if the orchard is tilled. If the orchard is in sod and is not yielding well, or if the trees are losing their vitality, even if the yield is still good, it will probably pay to till."

Pasturing methods. The following table gives strong evidence in favor of hogs over sheep or cattle in an orchard. Cattle rub trees, break branches, and are generally injurious.

Yields in bushels for 1902, with various methods of sod treatment. Trees set before 1880.

Treatment	No. orchards	Acres	Average yield
Pastured with hogs	22	105½	271
Pastured with sheep	15	232	216
Pastured with cattle	54	392	159
Sod, not pastured	47	256½	185

The necessity of fertilizing orchards received unequivocal support, for 292 orchards representing 1200 acres yielded 257 bushels per acre, while 111 orchards unfertilized yielded 202 bushels per acre.

Pruning. This is often badly done. Long stubs promote decay and hollow trees. Heavy pruning brings about an unhealthy condition of tree. We can summarize as follows:

"1. Large limbs should not be removed unless it is absolutely necessary.

"2. When such limbs must be removed, the pruning should be so done as to favor rapid healing of the wounds.

"3. Large wounds should be protected by paint till the tree can seal them."

Spraying. On this important practice our survey presents the following conclusions:

"The average price per barrel of the sprayed apples was $2.02; of the unsprayed, $1.80. From the sprayed orchards 15

per cent of the crop was barreled; from the unsprayed, 12 per cent. Without considering the apples that were evaporated by the grower, the average price of sprayed apples was 31.8 cents per bushel; of unsprayed, 27.7.

"If we count the apples that were evaporated by the growers as worth 20.7 cents, the average price paid for apples by the evaporators, then the income per acre from sprayed orchards averaged $77.84; from the unsprayed, $63.

"Most of the sprayed orchards were sprayed but once. Apples from many of these brought no higher prices than the unsprayed ones, but some of those that were well sprayed gave so much better yields and secured so much higher prices that they were able to raise the average as shown above."

How Far Apart Should we Plant our Trees?

Our field expert unhesitatingly says: "One of the greatest enemies of the apple orchard in Wayne County, as in most other apple-growing regions, is the apple tree. When the greater part of the orchards were planted, about forty years ago, there was a universal tendency to plant too closely. On 43 per cent of the area planted before 1880 the trees are 30 × 30 feet or less; 82 per cent are 35 × 35 feet or less. Only 18 per cent are over 35 × 35 feet; and a part of these were planted more closely, but have been thinned."

Here are the yields for the different distances, and these figures speak more eloquently than any other form of argument:

"Four year average:

Not over 30 × 30 feet	186 bushels.
31 × 31 to 35 × 35 feet	222 "
36 × 36 to 40 × 40 feet	229 "

"The more trees per acre the less the yield! The average yield for four years of orchards where the trees are not over 30 × 30 feet apart is 186 bushels; for those over 30 × 30 feet but not over 35 × 35 feet, 222 bushels; for those over 35 × 35 feet, 229 bushels."

Soils. The best soil in Wayne County for apple production is a brown gravelly loam, rather loose in character and underlain with heavier gravelly loam. It is fair to conclude, however, that "while the kind of soil is important in this locality, it is evidently not the most important factor in apple production and is not as important as the kind of treatment that the soil receives. The kind of care required varies with the soil. The Miami silt loam will doubtless produce a good crop with less manure than is required on any of the other types. The Miami stony loam is next strongest. The other types require larger applications of manure, but give good results when so treated. These latter are more open and are more in need of humus. The soil with the bed rock near the surface is entirely unsuited to apples. For the best production of apples there should be at least six feet of well-drained soil in every part of the orchard."

Drainage. This is a subject of the greatest importance with a perennial crop like the apple.

"*Losses caused by lack of drainage.* Of the 1,773½ acres of orchard land in Walworth, a township in Wayne Co., only 182 acres have any kind of under drainage. Most of these have only a stone drain or two in a particularly wet place. A few have tile drains. Fifty-four orchards, aggregating 232 acres, are reported as in need of drainage. This means that, in the opinion of the inspector, some tile drainage would pay. The average yield of these 54 orchards in 1902 was 203 bushels, 42 bushels below the average of the other orchards in this town. Of the 1,987½ acres inspected in the remainder of the county, 317 acres have some underdrains, but 831 acres need drainage in whole or in part."

Aspect. In Wayne County this seems to be a factor of some importance. "The easterly slopes in Walworth gave a larger yield each of the past four years than have the westerly slopes. The difference in 1902 was 23 bushels per acre in favor of the easterly slopes. In each of the other years the difference was greater. The north part of the county does not show this marked uniform difference. The differences are greater than one would expect. In each of the four years the northeast slopes have exceeded the northwest, the east have exceeded the west; the only exceptions are that in two cases the southeast have failed

to exceed the southwest. The four-year average in Walworth was 43 bushels in favor of easterly slopes."

The renter. The yield of apples from rented farms is much below that of farms managed by the owners as shown by the fact that owned farms yielded a four-year average of 210 bushels per acre, while rented farms yielded only 174 bushels per acre.

These are some of the leading features covered in this survey of an important apple-producing county in western New York. The moral of it all is that tillage, fertilization, pruning, and spraying, soil and aspect are important features in successful orcharding; but unless they are coupled with intelligent business management, the enterprise will fail. Practice, principle, and business methods must go together. The orchardist should not only know how much his orchard is bringing him in, but he should know how each of his trees is yielding. They do not all need the same treatment. The problem must be studied in general terms, but also in terms of individual trees and good business management.

Discussion.

Prof. F. A. Waugh inquired concerning the difference in the income from sprayed and unsprayed orchards.

Prof. Craig said that the difference in the income of sprayed and unsprayed orchards might not be more than ten dollars an acre, but occasionally runs as high as twenty-five or thirty dollars. He thought that three sprayings, as a rule, were necessary. The first when the buds began to show color; the second upon the setting of the young fruit; and the third depended on weather conditions. Dry weather and fungous growth are not correlated, but moist weather and fungous development are.

An inquiry was made as to how large an orchard would have to be to make it pay to use a power machine for spraying.

To this the Lecturer replied that for an orchard of fifteen or even ten acres on level ground it would pay to have a power sprayer. Some of these machines as now made are marvels of simplicity.

Robert T. Jackson asked as to the relative value of growing dwarf apples.

Prof. Craig replied that the dwarf apple has a place, especially in New England, where land is high priced and where high class apples have a market.

Theodore F. Borst asked the lecturer's opinion as to the value of growing shelter belts for orchards as well as for plantations of forest trees.

Prof. Craig replied that in certain exposed situations shelter belts were desirable, especially in the case of wind-swept orchards on the coast. They were useful also in preventing the too rapid evaporation of moisture from the land.

Miss Cora H. Clarke inquired if there was any danger of poisoning from the spray remaining on the fruit.

Prof. Craig answered that a very few cases of poisoning had occurred by this means, but that chemists had tested this matter and found that one would have to eat about a ton of fruit to get sufficient poison (Paris green) to cause injurious results. As a rule if the spraying is done carefully no harm can ensue.

William N. Craig asked what were the principal varieties of apples grown in western New York.

The Lecturer stated that the leading kinds were the Baldwin, Greening, Roxbury Russet, and Northern Spy. A number of other varieties were also grown, such as the Hubbardston, Maiden Blush, and Spitzenburg, and, he was sorry to say, they grew a few of the Ben Davis.

James H. Bowditch inquired if the disease of canker was not more liable in orchards poorly cared for than in those well kept. To which the answer given was "certainly."

Warren H. Manning asked if it were not advisable to plant shorter-lived trees as fillers in young orchards; such as the peach or plum; to be removed when the main orchard is well grown.

Prof. Craig replied that it would depend upon conditions. He would recommend apples as fillers if one would rigidly cut out when necessary. The fillers are, however, often left a year or two too long and are only removed after damage has been done.

Mr. Spooner, referring to the subject of neglected orchards,

inquired how long it would take to renovate them by pruning and cultivation.

Prof. Craig stated that he would advise the purchase or rental of such run-down orchards of good varieties, and that it would take from five to six years to bring them into paying condition, if they were not too old or decayed. He had known one to produce a paying crop in three years.

The first thing to be done to improve a neglected orchard was to open up the soil by shallow plowing or by means of a spring-tooth or disc harrow; next prune moderately. Then fertilize with stockyard manure or other nitrogen bearing substances. This treatment to continue about three years. He gave an instance in which a farm had been paid for in a few years from the crop of an orchard of nine acres of Baldwins that had been thus treated.

J. Woodward Manning inquired how long one could depend upon an apple orchard's producing capacity.

Prof. Craig answered, sometimes ninety years; and he could see no reason why they should not last hundreds of years if properly cared for.

Joshua C. Stone said he could see no reason why an apple orchard should not live and be productive even beyond a hundred years. His trees looked as large fifty years ago as they do now.

DWARF FRUIT TREES.

BY PROF. F. A. WAUGH, AMHERST, MASS.

Delivered before the Society, February 11, 1905.

There used to be considerable interest in dwarf fruit trees fifty to seventy-five years ago. They were nearly always mentioned in the pomological discussions, and all the text-books of that time made extended reference to their use and propagation. This was partly due to the fact that American horticulture at that time had not broken entirely away from the horticulture of Europe. Dwarf fruit trees had always been grown in the old country and the European books gave liberal attention to them. There was still another reason for the attention given them, however, in the fact that they were considerably grown. At that time, furthermore, the great commercial interest of the present day had not come to the front. But during the last few years these commercial enterprises have monopolized our thought and we have largely forgotten about the old-fashioned amateur horticulture to which the growing of dwarf fruit trees belongs.

At the present time there are many indications that we are coming back to some of the old-fashioned ideas, especially as regards amateur fruit growing. There is a lively renewal of interest in small grounds and gardens. These circumstances, along with several others, are bringing dwarf fruit trees back to notice; and in all probability they will come back into vogue to a certain extent. At all events there is very much in the subject to interest us; and our knowledge of dwarf fruit trees, their propagation, pruning, and training, ought to be reviewed and brought up to date.

First of all it may be proper to tell what a dwarf fruit tree is. That seems like too simple a question to be mooted, but it is a question I have so often asked me that I think best to make the explanation. A dwarf fruit tree is simply one which is made to

grow in smaller stature than the same variety reaches under ordinary conditions of treatment. There are three principal ways by which this dwarfing is secured. These are (1) propagation, (2) pruning, (3) training. The first method is by much the most important. A dwarf tree is nearly always propagated by budding or grafting on some kind of a root which grows slowly, and thus the slow-growing root checks the growth of the top to such an extent that the top is dwarfed. The commonest and most striking example is the propagation of dwarf pear trees. These are grown by budding ordinary varieties, such as Bartlett, Duchess, or Anjou, on quince roots. The quince root grows much more slowly than the pear root so that a Bartlett pear tree on a quince root will be much smaller at the same age than a Bartlett tree on a pear root. I will refer to this matter as it affects other species of trees further on in this lecture.

Pruning has also been referred to as one of the means of dwarfing trees. Many trees are kept back to their small stature largely by this means. If they are allowed to grow unpruned they will eventually become as large as any trees of the variety. This refers to all kinds of dwarf trees. More or less heading back is always required to keep the trees in their dwarf form.

In a somewhat similar manner trees are retained in their small forms by training them, that is by tying them upon a trellis or against a wall or to stakes, and preventing their growth beyond prescribed limits. Reference will be made also to this subject later in this lecture.

The first question which comes up in presenting such a subject as this is that of its practical utility. Almost every one will ask at once "What is the value of dwarf fruit trees?" This is a fair question and it ought to have a fair answer.

We may as well say at once that dwarf fruits are not very promising from a commercial point of view. They will not in any way rival standard trees for large orchards. In fact it is still a question whether fruit can ever be grown for market in this country profitably on dwarf trees in competition with fruit grown in the usual way. I am inclined to believe that certain fine dessert varieties can be grown on dwarf trees for fancy trade where large prices may be secured. We have a constantly

increasing market of this kind in America. It is not unusual for fancy apples in our city markets to bring twenty-five cents a piece. There are many customers who want the very finest fruit that can be produced without any question as to the price. Such persons would pay fifty cents a piece for apples without any objection, providing that the fruit was really fancier than anything else in the market. It is well known of course that such prices as these are frequently realized in the markets of Europe. Any grower who might be able to reach such customers as these could well afford to grow fancy fruit on dwarf trees.

Dwarf trees are of practical value however for other purposes. They are good for interplanting in an orchard of standard trees. An orchard of standard pears, for instance, might be interplanted with dwarf trees, and this is sometimes done. Dwarf trees come into bearing much earlier than standard trees and can be cut out at any time when the large trees require the entire space. Dwarf apples are sometimes used for planting between rows of standard apples.

Anyone who wishes to keep a large collection of apples, pears, or plums or who wishes to test new varieties will find dwarf trees very desirable. They occupy much less ground and they bring the new varieties into bearing at a much earlier time. Dwarf apple trees, for instance, usually bear at two or three years old while standard trees of the same varieties bear at seven to nine years.

Anyone who wishes to grow fine specimens for exhibition will find dwarf trees even more useful. Beyond the fact already mentioned, that a large collection of varieties can be maintained in a small area, he has the advantage of producing the very finest and showiest specimens of the variety under culture. As a rule, to which I do not know any exceptions, the finest specimens of apples, pears, peaches, and plums can be grown on dwarf trees.

The greatest value of dwarf fruit trees, however, lies in their adaptability to the needs of small landowners. A large and increasing proportion of our population now lives a suburban life. They are neither on the farm nor yet in the city. Moreover, these people are taking a much larger interest than formerly in garden affairs and are doing more in growing flowers, fruits,

and vegetables. Such persons have only small grounds under cultivation and cannot grow many large trees. In fact some of the city lots where really good gardening is done would be entirely monopolized by three or four full-sized Baldwin apple trees. Dwarf apples, pears, or plums which can be set at six feet apart, or even less, fit the space much better. A comparatively large number of trees can be planted and many more varieties can be indulged in.

Another great advantage to this class of the population lies in the fact that dwarf trees come into bearing much earlier. Many of these people live only a short time in any one place. They move about frequently and it never seems worth while to plant apple or pear trees which will bear no fruit inside of seven or eight years. In seven or eight years they expect to be somewhere else. But trees which will bear fruit in two or three years might seem worth while. These may be planted on rented land. It seems to me that some special effort ought to be made to bring this matter to the attention of the suburban gardeners.

Dwarf trees are propagated by the usual methods of budding and grafting. They are more commonly budded than grafted, although whip grafting, side grafting or veneer grafting may be successfully practiced with apples or even with pears. In certain cases such grafts prove very satisfactory in the propagation of plums. Still it remains true that budding is more commonly employed. In either case it is largely a matter of convenience. Each nurseryman follows either method which seems most expeditious in his own case. There is no difference in the tree after it has grown. A budded tree is just as good as a grafted tree and vice versa.

The principal problem in the propagation of dwarf fruit trees is the choice of suitable stocks. I will mention here the stocks which have been found by experience to answer the purpose best.

Apples are usually dwarfed by propagating them on Paradise stocks. Paradise is simply a very dwarf apple which is largely grown from layers. The young trees are cut off near the ground and are encouraged to throw up sprouts. These are covered over with earth and when one or two years old the stools are taken

up and divided. These Paradise stocks come from France where this work is done chiefly.

The Doucin stock is also used to some extent for dwarfing apples. It produces a tree midway between the very dwarf form grown on Paradise and the ordinary standard form. It has not been so much used in this country. Doucin stocks come also from France and are grown in the same way as Paradise stocks.

On account of the slow growth of the Paradise and Doucin apples, trees grafted or budded on them make a slow and irregular growth in the nursery. It is difficult to grow a nice block of trees, especially on Paradise stocks. This is why the nurserymen in this country have practically given them up. Any tree grower would be compelled to get about two or three times as much for dwarf apple trees grown on Paradise roots as for the same varieties grown in the ordinary way, because it costs him two or three times as much to grow a given number.

Pears are practically always budded on quince stocks for dwarfing. The quince most used for this is Angers which comes also from France. A few varieties of pears will not form good unions on quince roots. Such varieties are "double-worked." The process of double working is as follows: The quince root is budded with some variety as Anjou which grows well upon it. After this pear scion has grown one year the refractory variety, say Seckel or Dana's Hovey, is budded on the Anjou upon which it makes a good union. The completed tree as it is planted in the orchard then consists of three parts, the pear top of the desired variety, the quince root, and the very short section of some other pear whose sole office it is to unite the two uncongenial neighbors.

Peaches and nectarines are dwarfed by working them on plum roots. They will grow fairly well on almost any good plum root. The Myrobalan plum which is one of the easiest of all stocks to be worked has been largely used. St. Julien plum is probably better and is considerably used in France and Germany. The peach may also be easily propagated on the dwarf sand cherry which gives a good dwarf peach tree of specially small stature.

The old rule for dwarfing plums was to work them on Myrobalan plum roots. A fairly small plum tree can be produced in

this way provided it is kept vigorously headed back. The Myrobalan plum stocks, however, have been used largely in this country for the propagation of all ordinary plums, so that a majority of what we know as standard plum trees are really growing on this so-called dwarfing stock. It is obvious that some still slower growing stock must be found if the requirements of the situation are to be fully met. Fortunately plums may be worked on a great variety of stocks and some of these seem to offer the required characteristics. In Iowa, Minnesota and the neighboring states plums are very largely grafted on Americana roots, that is on some of the seedlings of *Prunus Americana*. These stocks produce a tree considerably dwarfer than those grown on Myrobalan plums. Moreover this stock is hardy, vigorous, healthy, and in all other respects satisfactory. Some persons have complained that it sprouts from the roots, but I have never observed this trait, although I have seen many plums on Americana roots. I do not think that this stock is more objectionable in the way of sprouting than many others.

Another plum stock which has been extensively used in an experimental way and which offers special promise as a dwarfing stock for plums, is the sand cherry. This plant is native to Massachusetts, and, in fact, in some of its forms, to practically all the northern states as far west as the Rocky Mountains. Its different forms are known botanically as *Prunus pumila*, *P. cuneata*, and *P. besseyi*. These all seem to be good stocks although our experience has been specially happy with *Prunus besseyi*. All kinds of plums and peaches grow splendidly on this root. They make an exceptionally fine growth the first year in the nursery, in this respect differing markedly from most dwarf trees. The great difficulty experienced thus far has been in securing stocks. We are now experimenting with different ways of propagating *P. pumila*, *P. besseyi*, and *P. cuneata* and as soon as some satisfactory method of producing these rapidly and cheaply has been established they bid fair to become the leading dwarfing stock for plums.

Dwarf cherries are sometimes spoken of. For the most part the so-called dwarf cherries are merely such varieties as Morello, Vladmir and other north European sour cherries which never

make a large tree. No really satisfactory dwarfing stock for the cherry is in commercial use. There seems to be a chance, however, of discovering some native plum or cherry which answers the purpose.

Dwarf trees are planted in the same way that standard trees are, with two exceptions. First, they are usually planted shallower for the reason that when deeply planted they sometimes take root from the scions and cease to be dwarf trees. The second exception lies in the fact that they may be planted much more closely together. While thirty-five feet apart is looked upon as being proper spacing for standard apple trees, dwarfs may be planted at eight or nine feet apart and indeed can be very well managed for a number of years at a distance of four to six feet apart. A gentleman told me recently of an orchard of dwarf apple trees now over thirty years old and in fairly good condition, the trees having been planted six feet apart and maintained at that distance to the present time.

Some of the forms of dwarf trees, especially upright cordons, can be planted even closer together. The space commonly recommended for upright cordons of apple and pear is sixteen to eighteen inches apart. To show the possibilities of condensation which lie before one in planting dwarf trees, I may say that in a garden of less than one-quarter of an acre I have planted over five hundred fifty permanent trees. When the plan is complete there will be about six hundred or at the rate of twenty-four hundred trees to the acre. Many of these are already in bearing. Standard apple trees are ordinarily planted thirty-five to the acre.

Dwarf fruit trees are usually trained in some particular form. This training is not absolutely essential, but more or less of it is desirable in order to get the best results. The simplest methods appeal most to the majority of people, especially in this country. Still I am sure that garden lovers who become interested in this line of work will go more and more into the different methods of formal training.

There are almost an infinite number of ways in which trees may be trained. Some of these ways are merely fantastic and only comparatively few of them are really useful. All the really

practical ways can be easily reduced to eight as shown in the following :

A. Trained in tree-like form.
   a. Pyramid.
   b. Bush.

B. Trained with several branches in one vertical plane.
   a. Espalier.
   b. Fan espalier.
   c. Palmette-Verrier.

C. Trained to single stems — Cordons.
   a. Upright.
   b. Inclined.
   c. Horizontal.

The pyramid differs from the bush form chiefly in the fact that in the former a straight central stem is maintained from which secondary branches radiate, while in the bush form the center is cut out and several radiating side branches constitute the framework of the tree. The bush form is better adapted to apples, while the pyramid can be better applied to pears.

The espaliers of different forms are extremely popular where training is practiced and are considered to be amongst the most valuable forms for growing fancy fruits. They require of course a great deal of care and attention in order to produce the necessary forms and to keep them in health and vigor.

Cordons consist of a single stem which may be placed in almost any position; the three common forms being vertical, oblique, and horizontal cordons. These are simple and easy to grow either against a trellis or against a wall and they produce very excellent results when properly cared for, especially with pears and apples.

The pruning of dwarf fruit trees, especially those trained in particular forms, is a somewhat complicated subject. Elaborate directions can be found in any of the European fruit books, but nothing has been written in detail on this subject in America. One or two general principles may be stated here, and these must suffice for the present.

The general management of the tree can be best understood by referring to one of the simplest forms, say the vertical cordon.

This tree is composed of a single stem along the sides of which fruit spurs are formed and fruit is borne. Each year this cordon is encouraged to throw up strong-growing shoots or leaders at the top, and at the same time is prevented from making any strong wood growth along the sides of the stem. The strong shoots at the top feed the tree, or as we sometimes say, "they pump up the sap." As fast as shoots start from the sides of the main stem they are pinched back. This pinching may be required six or eight times, possibly even more, in the course of a summer. This constant checking of the vegetative growth from the side buds on the stem tends to encourage the formation of fruit spurs and fruit buds in this region, which is indeed the fundamental object of the whole scheme of pruning. At the beginning of the succeeding year the leading shoots at the top of the cordon are cut back almost or quite to the point where they began the previous year's growth. New shoots arise there year after year from almost the same point to be annually sacrificed in the same way.

Considerable skill and experience is required in pinching back the side shoots so as to encourage the formation of fruit spurs and buds. Different species require different treatment in this respect, since the fruit spurs form differently on different kinds of trees. Roughly it may be said that with most fruit trees these side shoots should be pinched back as soon as they have made six leaves or earlier. They should be headed back to not more than four buds (or leaves). Many of them will promptly start again. This second growth should be headed back somewhat sooner, say when it has reached a length of four or five leaves. It should also be headed back more closely, say to two or three buds. If the shoot starts a third or fourth time, as sometimes it does, it should be repeatedly pinched back, each time earlier and each time more severely. Usually all further tendency to vigorous growth will be stopped early in the summer and after the second or third pinching. This is more likely to be the case with apples and pears. Peaches and plums have to be allowed somewhat freer growth.

When fruit spurs become old and weak as they will commonly do on the apple and pear after about five years, they should be

cut out altogether or headed back to within an inch or so of the main stem. Sometimes a new growth will be secured from the base of the spur and this new growth can be promptly developed by the system of repression outlined above into a new fruit spur. In some cases where the fruit spurs die or have to be removed, it is even necessary and practicable to bud or graft in new shoots or new fruit spurs. This looks like a good deal of work to be given to a tree, but it is not more difficult or exacting than many things that we already do in our garden work.

In conclusion I wish to reiterate the statement that the growing of dwarf fruit trees is not urged upon the public. It is not recommended to everybody and especially it is not claimed to be commercially practicable.

On the other hand it will bear serious consideration by all that large class of people who have small grounds of their own and who wish to grow a limited quantity of fine fruit for their own use. The large number of trees which can be put on a small area, and the comparatively early age at which they may be brought into bearing are considerations of prime importance in the eyes of all small landowners.

BACTERIA AS FERTILIZERS.

BY DR. GEORGE T. MOORE, WASHINGTON, D. C.

ANNUAL LECTURE UNDER THE JOHN LEWIS RUSSELL BEQUEST.

Abstract of an illustrated lecture delivered before the Society, January 23, 1904.

It is hardly necessary for me to discuss in detail the effect of leguminous crops upon soils or the necessity for the roots of these crops being provided with the proper nodules in order to obtain the greatest good from them. You all know how necessary nitrogen is in the soil, and any means calculated to increase the quantity of this most important plant food is, of course, of great practical value. From the earliest days of agriculture it has been recognized that all plants belonging to the Leguminosae, that is, peas, beans, clover, alfalfa, etc., had a decidedly beneficial effect upon the soil, but it is only within recent years that we have been able to explain this phenomenon.

Although it has been a matter of common observation that the roots of leguminous plants were usually provided with peculiar swellings or nodules, these were popularly supposed to be due to the bites of worms or insects, and that they were directly connected with the fertilizing power of the plant was not discovered for many years. Even after it was shown that leguminous plants devoid of these nodules were unable to benefit the soil, there was the widest difference of opinion as to why they appeared upon some plants and were absent from others. Now we know that the legume nodule is the direct effect of the presence of myriads of bacteria which have made their way into the roots through the root hairs, and as a result of the irritation the plant manufactures the nodule, each cell of which is full of bacteria.

Although it is true that thousands of acres of land in this country and abroad are well stocked with these nodule-forming bacteria, it is likewise a fact that there is equally as much land

which does not naturally contain these beneficial organisms. Practical farmers have realized for years that some parts of a field would produce clover or alfalfa successfully, while others, which seemed to be in fully as good condition and were as carefully cultivated, failed to produce a good stand. Many times this condition could be remedied by the addition of lime or some careful cultural method, but it was often found that the roots of the plants which failed showed no nodules and it was evident that the nodule-forming bacteria did not exist in that spot. For this reason it became necessary to devise some means of artificially introducing into the soil the nitrogen-fixing bacteria. Naturally, the easiest and simplest way of accomplishing this was to transfer soil from a field which had produced nodule-bearing plants and by this means introduce the bacteria into the soils which were devoid of them.

Transferring soil from one field to another on the same farm is a comparatively simple and inexpensive process, but when, as is often the case, thousands of pounds of soil have to be shipped hundreds of miles, the operation becomes more difficult. It is also a fact that certain diseases of plants, the spores of which remain in the earth, are widely disseminated by such means of attempting to introduce nodule-forming bacteria, and in some cases where the disease causes great damage to leguminous crops, it has become necessary to abandon altogether this method of inoculation. There is also great danger of introducing objectionable weeds and insect pests, so that if any better means of inoculating the soil could be devised, it would certainly be desirable. It should be understood, however, that many cases of inoculation by soil transfer in this country have been eminently successful, and, although the percentage of failures is greater than is usually supposed, there is no question but that much good has been done by this means of inoculating the soil.

A number of years ago a German botanist conceived the idea of bringing about inoculation by the means of pure cultures. This was to be accomplished by isolating from the nodule the right organisms and then transferring to tubes containing a medium which would enable them to multiply rapidly. There was no difficulty in obtaining these pure cultures, and within a short

time the product was put upon the market under the name of "Nitragin" and sold at the rate of one dollar per bottle, which was sufficient for one-half acre. Numerous experiments abroad, with a few in this country, soon demonstrated that while in some instances Nitragin produced an abundant formation of nodules, there was a vastly greater number of cases where no benefit was obtained.

When this line of investigation was taken up in the Department of Agriculture, the demand for some artificial means of inoculating soil was already sufficiently great to make it desirable, if possible, to increase the bacteria very rapidly and to insure a sufficient quantity of them so that they could be distributed to various parts of the country where it seemed that they were needed. For this reason the means used for propagating them was similar to that of the German botanist; that is, clover or bean, or whatever the plants from which the bacteria originally came, was stewed and to this decoction were added sugar, peptone and other substances ordinarily used in cultivating bacteria. The result was a medium very rich in nitrogen and the growth obtained was all that could be desired.

At this stage the problem seemed an exceedingly simple one and it was thought that within a short time it would be possible to send out bacteria by the keg, barrel, or any quantity desired. Unfortunately, however, when these organisms were tested in the greenhouse and in the field, it was found that they did not produce nodules. There could be no question about their having been derived from the true nodule-forming organism, but it looked as though they had by some means or other lost the power of infecting the plants upon which it was so desirable to have them produce root nodules. After a little experimenting, it became evident that the manner of growing these bacteria was not one designed to make them efficient nitrogen fixers. When you remember that these organisms reproduce themselves in from thirty to forty-five minutes, you can readily see that if they are at all susceptible to their environment, the tremendous number of generations obtained at the end of a few days enables any slight difference in their efficiency to be transmitted in a most astonishing way; and that, although one started with an organism

capable of producing nodules and fixing nitrogen, unless the conditions were exactly right this function might be entirely lost.

Experiments soon proved that this loss of power was the result of growing upon a rich nitrogenous medium. It was as though the bacteria soon discovered that it was easier to get nitrogen out of the substance upon which they were growing than it was to fix it from the air, for it requires a tremendous energy to combine free nitrogen. Consequently, they simply degenerated and became lazy, just as a number of other organisms do under the same circumstances, and so long as they were allowed to grow under such luxurious conditions they refused to perform the beneficial function for which nature intended them. As soon as this fact was thoroughly demonstrated an attempt was made to find some medium which would sustain the life of the bacteria and yet not enable them to degenerate and lose their beneficial power. By transferring the bacteria to a medium made up of chemically pure salts which contained no nitrogen and solidifying with silica jelly, it was possible to obtain colonies which had never had access to nitrogen in a fixed form. These colonies could then be transferred to nutrient solutions devoid of nitrogen, and in this way the beneficial function of combining nitrogen from the air was so augmented that chemical tests proved these organisms to be from seven to ten times as efficient as when they were originally isolated from the nodule.

Of course large numbers of the original bacteria were not able to stand this sudden transition from a comparatively rich nitrogenous medium to one absolutely devoid of this element, but a few million bacteria more or less makes practically no difference. If one organism persisted it was a matter of a very short time when this could be multiplied to any desired quantity. Thus by a process of selection it was possible to obtain a culture which so far as the direct fixation of nitrogen was concerned certainly was very much more efficient than the ordinary wild, nodule-forming organisms.

There is one other important element, however, which must be maintained or increased if these organisms are to produce the best results, and that is their ability to penetrate the root hairs,

for at present, at least, it does not seem that these bacteria are able to obtain sufficient energy outside of the plant to fix nitrogen in any perceptible quantity. It is probable that they need large amounts of carbohydrates to enable them to carry on their important function, and these, of course, are readily obtained from the roots of the plant. Consequently if they are not able to enter the plant they are of little or no benefit to the soil. The penetrative function of these bacteria is generally restricted to a very small motile form which is seldom found within the root nodule after it has developed to any size.

Growing nodule-forming organisms upon nitrogenous jelly or agar tend to fix the large rod-shaped form which cannot penetrate the root hairs. In fact it is almost impossible after these bacteria have been grown under what would seem to be the most favorable conditions for a considerable length of time, to cause them to break up into the small root-hair penetrating form. On the other hand, bacteria cultivated upon nitrogen-free media, particularly when kept in liquids, readily break up into this small form and thus are able to produce large numbers of nodules filled with bacteria which are at what may be considered their highest state of efficiency.

In order to test the results of these selected methods several acres of different legumes were planted upon the experiment farm near Washington, part of which was inoculated with bacteria grown upon rich nitrogenous media, and part with organisms taken from the same silica jelly agar and thereafter kept growing in solutions absolutely devoid of any fixed nitrogen. The results were very striking indeed. In the case of soy beans some thousands of plants grown in rows and inoculated with bacteria cultivated after the method of Nobbe upon decoctions of soy beans with peptone added failed to show a single nodule; whereas other plants in rows within four feet of these and inoculated with bacteria taken from the same nodule, but grown upon nitrogen-free media, showed an average of from ten to twenty-five nodules per plant. Of course the contrast above ground was equally striking.

It will be impossible for me to read you the great number of favorable reports we have had from practical farmers throughout

the country who have successfully used these selected bacteria. Of course it was expected that soils which were devoid of any of these organisms would be improved by inoculation, but it was not supposed that where the bacteria already existed and had been producing a fair number of nodules upon the standing crop that the addition of the cultivated form would be of any distinct benefit. Reports demonstrate, however, that in some instances the inoculation with the cultivated forms shows as much difference upon the field as in those places where bacteria had not previously existed, and it seems probable that by following the method so well understood by plant breeders that eventually we may be able to develop an organism which will be available for a number of conditions which at the present time it is not supposed possible to benefit.

Numerous laboratory experiments have seemed to demonstrate that it is impossible for the nodule-forming bacteria to penetrate the roots of legumes after the plants are of any size. For this reason it has always been considered that it was useless to attempt to add the nitrogen-fixing bacteria to a growing crop. However, experience with these cultivated forms seems to indicate that under some circumstances the use of inoculating material upon a standing crop of any age will be beneficial.

I quote some opinions of practical men on the subject as follows: F. G. Short of Fort Atkinson, Wis., writes, "In July the Department sent me a sample of alfalfa bacteria, with directions for application. This was used on a field of alfalfa which had been newly seeded this spring and up to that time had shown a very small growth of yellow, rather stunted plants. I used the bacteria according to directions and can see there is quite a decided change for the better." John C. Lloyd of Utica, Neb., used a culture upon five acres of alfalfa sown three years ago. The result was "ranker growth than before treatment and much heavier crop of hay. Cut three times and could have cut four, but pastured the last crop."

In Hoard's Dairyman for Nov. 11, 1904, an account is given of the treatment of old alfalfa fields with liquid culture applied by means of a street sprinkler. An experimental trial of this method was made by one of the editors of the paper with "very evident

success." From Levy, Mo., Thomas O. Hudson writes regarding a field of alfalfa planted in 1901 and treated with inoculating material in March, 1904. He says: "Results good. It was sickly and yellow and spindling, and did not do any good until this year. This year it was dark green and thrifty. I think it will be better next year." Another report upon an alfalfa field to which bacteria were added during the fourth year was recently sent by U. J. Hess, North Yakima, Washington, who wrote: "The crop, which had been short, pale, and spindling, took on a darker color and a rank growth and yielded, I think, about three times as much as formerly."

The same results have been noted for clover, H. W. Dunlap, Holland Patent, N. Y., reporting that having more of the liquid culture than could be used for some seed he was inoculating he mixed it with a light loam and spread it upon a part of a field already in clover. The difference in color and size of the plants later on indicated where the soil had been distributed. Mrs. J. A. Wells of Bryn Athyn, Pa., tried watering pea vines a month old, and with undoubted success. John R. Spears of Northwood, N. Y., treated his peas with the culture solution with the exception of one row, after they were two or three inches high, and the decided benefit is indicated by his report of his success. It will thus be seen, that whereas the ordinary wild bacteria of the soil are not able to penetrate the roots of plants of some age, the cultivated, more virulent form has less difficulty in accomplishing this, and, where conditions are favorable, is able to produce nodules which very soon become beneficial to the plant.

In order to test the value of these cultivated bacteria which have been improved by selective methods, it was decided to distribute sufficient material for inoculating an acre or more of ground to a large number of practical farmers throughout the country. This distribution was begun about a year ago and we have already received some three thousand reports giving the results of the experiments. It would be very interesting if I could read you the experience of the men who have used these bacteria, but as some of the reports have already been published and it would take altogether too much time to give you even an abstract of their reports, I can only say that the results have far

exceeded our expectations, the percentage of success upon all crops, under all conditions, and in every part of the country being over seventy-five per cent. This means that the farmer was able to see a decided difference in the legumes which had been treated with the bacteria distributed by the Department as compared with those grown under ordinary circumstances.

Sometimes the percentages of increase were as much as 500 per cent or more, and in the majority of cases the difference in favor of the inoculated crop was 100 per cent. When it is remembered that all of these experiments were carried on by men who had no other knowledge of the bacteria than that given them in the printed directions accompanying the cultures, that they were not selected in any way, and that oftentimes the region in which they attempted to grow the specific crop was not by any means best adapted for it, I think you will agree with me that the results have been very satisfactory.

GENERAL DISCUSSION ON FLOWERS.

OPENED BY J. WOODWARD MANNING, READING, MASS.

Saturday, February 25, 1905.

A general discussion on the subject of flowers and their culture was introduced into the course of horticultural lectures today. It was opened by J. Woodward Manning who presented the following paper on

Flowers and Their Seasons.

A review of the more prominent classes of flowering trees, shrubs, and herbs that are commonly used in ornamental planting probably will be of some use in leading one to a more satisfactory selection that will enable a continuance of blooming effect from early spring to the hard frosts of late fall. To do this the shortest possible mention of species must ensue to allow the subject to be covered.

The first warm days of April find the scarlet maple ready to unfold its crimson flower buds, and the spice or Benjamin bush (*Benzoin odoriferum*) is occasionally found in this vicinity in showy colonies aglow with yellow at the same time. The pussy willow has perhaps already passed and the aspen poplar, birches, and alders are filling the air of the swamps and wild woods with their floating pollen from showy catkins.. The shad bush is quite ready to burst into bloom in the swamps, and occasional isolated native groups of flowering dogwood are opening their showy flower bracts.

Of introduced trees the cornelian cherry (*Cornus Mas*) is even more showy in its wealth of yellow flowers than the spice bush, and peaches quickly respond to the warmer days. The red bud (*Cercis Canadensis*) is in full bloom by the end of the month and the Hall's magnolia (*Magnolia Halliana*) persists in bloom-

ing even if its fragrant, pure white flowers do suffer by late frosts.

In shrubs *Spiraea arguta* often blooms with thin snow on the ground. The mezereum in its bright purple and pure white varieties braves several degrees of frost that it may be foremost in the ranks of showy, berry-bearing shrubs. The lily of the valley tree (*Andromeda floribunda*) and its Japanese cousin have been patiently waiting all winter with half-opened buds for an opportunity to display their wealth of bloom, and, with the Cornish heath (*Erica vagans*), are most welcome in their early bloom. Fothergillas, Cydonias or Japan quinces, Japanese hazels (*Corylopsis*), leatherwoods (*Dirca*), golden bells or Forsythias, shrub yellow-roots (*Xanthorrhiza*), Thunberg's spiraeas, and Chinese wistarias all compete with each other to make a glorious show before May overtakes them.

Our native Hepatica or liver-leaf generally leads in herbs, and yet the rivalry for precedence of Claytonias, bloodroot (*Sanguinaria*), wind anemones (*Anemone nemorosa*), squirrel corn, and wake-robins tend to give that peculiar interest to our woodland rambles. In the gardens crested and vernal iris (*Iris cristata* and *I. verna*) are racing. Lungworts (*Mertensia*), alpine rock-cress (*Arabis*), moss pinks (*Phlox subulata*), speedwells (*Veronica*), hardy candytufts (*Iberis*), golden yarrow (*Achillea tomentosa*), the Geneva bugle (*Ajuga Genevensis*), madworts (*Alyssum*), alpine gentians (*Gentiana*), and creeping forget-me-nots (*Omphalodes*) are striving to outdo their country cousins, and trying madly to keep in advance of the oriental and alpine poppies (*Papaver*), the Christmas roses (*Helleborus*), and the English cowslips and polyanthus (*Primulas*). The leopard's bane (*Doronicum*) holds forth its heads, a reminder of the innumerable cousins of the composite family to follow.

In the meantime the innocence of the pastures and meadows (*Houstonia*), while insignificant in size, more than makes up this deficiency by its prolific abundance sufficient to color the landscape. Bulbs, too, have been contributing their share; snowdrops have fought with Siberian squills (*Scilla Sibirica*) and they with Puschkinias from Asia Minor and glory of the snows (*Chionodoxa*), to see which could outstrip the tulips and narcissi. The

hyacinths with their fastidious requirements have repaid tender care by fragrance and beauty of color and form with symmetrical mien. Winter aconite (*Eranthis*), Pasque-flower (*Anemone Pulsatilla*), and ox-eye (*Adonis*) have already passed their flowering period and are preparing for a summer's rest.

May arrives anxious to outdo her predecessor. She flashes most gorgeous Chinese and Japanese magnolias into a wondrous wealth of bloom, and permeates the air with the fragrance and rare beauty of the sadly overlooked Norway maple. Larches combine brilliant coloring of rather inconspicuous flowers with softest green unfolding foliage. Plums and cherries in great variety tinge the landscape with their inflorescence. Flowering crabs bend beneath their burden of bloom in delicate shadings of crimson, pink, and white. Sheltered snowdrop trees (*Mohrodendron* or *Halesia*) repay this care in their marvelous way, and toward the end of the month thorns in great variety by their prolific abundance of showy white, subtly fragrant flowers give promise of their showy autumn crops of fruits.

Shrubs make a wonderful show in confusing variety; spiraeas, pearl bush (*Exochorda*), Jew's mallows (*Kerria*), Carolina allspice or calycanthus, golden currants (*Ribes*), bush honeysuckle (*Lonicera*), in great variety, rose acacias (*Robinia hispida*), Himalayan cotoneasters, pink and white flowered, bladder nut (*Staphylea*), Persian lilacs, and Japanese chestnuts (*Xanthoceras*) are vying with the gorgeous hued hybrid azaleas to detract attention from the wildings; but the mayflower (*Epigea repens*), Pinxter flower (*Azalea nudiflora*), and Rhodora hold their own for quiet harmonious beauty, and one cannot choose between the rivals.

Bulbs are in their heyday of beauty; tulips in all their galore of marvelous coloring; the weird Fritillarias startling in their variety of habit and play of color; the white lipped grape hyacinths; the stars of Bethlehems and dog-tooth violets; narcissus, squills, and wake-robins (*Trillium*) are still with us.

Of herbs silvery yarrow (*Achillea argentea*), windflowers (*Anemone*), columbines (*Aquilegia*), thrifts (*Armeria*), daisies of England (*Bellis*), Cerastiums, shooting stars (*Dodecatheon*), mandrakes (*Podophyllum*), Solomon's seal (*Polygonatum*),

pansies and violets, Primulas and barren-worts (*Epimedium*), lily of the valley, day lilies (*Hemerocallis*), rockets (*Hesperis*), dwarf iris, and creeping phlox each adapted to its own use and presenting possibilities to enliven every portion of one's grounds. Why should we crave the evanescent effect of the tender bedding plants to the exclusion of the above with so much beauty awaiting our effort.

June arrives with its marvelous horse-chestnuts, the tulip tree with its soft-hued flowers, the golden chains or Laburnums, the mountain ash (*Sorbus*), and the late blooming crabs and cherries. The country roadsides are lined with the locust (*Robinia*); lindens, basswoods and limes virtually load the air with the honeyed fragrance of their pale yellow flowers; later in the month the white fringe (*Chionanthus*), small in stature, shows wonderful masses of purest white flowers amidst its rich, dark green foliage. Finally the yellow-wood (*Cladrastis*) adds to its graceful form a marvelous sight of hanging festoons of purest white flowers, and in shrubs azaleas are continuing their wondrous range of color.

Rhododendrons take precedence in the popular appreciation but to those who cannot afford their expense and care there remains abundant material to select from. Lilacs in all their range of color, in which such improvement has been attained of late, Weigelas, beautiful in all aspects of foliage or flower and wondrous prolific of bloom, Spiraeas, Deutzias, dogwoods, snowballs, privets in great variety, mock orange or Syringa (*Philadelphus*), deliciously fragrant and of varied kinds. The woods teem with their pendulous, yellow flowered barberries, their dockmackies, arrow-woods, hobble-bushes, and Appalachian teas, all members of a single family, the Viburnums, whose varied wealth of later-berried effects renders them interesting long beyond the flowering period, elders (*Sambucus*) and choke berries (*Aronia* or *Sorbus*), the showy mountain laurel (*Kalmia latifolia*) which will continue to bloom in the deeper woods well into July. Then the roses always associated with June and too numerous in variety and too marvelous in their beauty and fragrance to other than mention. The heather with all its associations is at its best at this time and with other shrubs like the tamarisk, indigo

shrub, and lead plant carry on their bloom effect into the next month.

Herbs are in their greatest profusion; rose campions (*Agrostemma*); columbines (*Aquilegia*); Astilbes; golden chamomile (*Anthemis*); St. Bruno's lilies (*Anthericum*); milkweeds including the orange butterfly weed (*Asclepias tuberosa*); poppy-mallows (*Callirhoë*); harebells (*Campanula*), in great variety; forget-me-nots (*Myosotis*); lupins (*Lupinus*); the graceful, pendent flowered alum-root (*Heuchera*); violets; speedwells (*Veronica*); tick-seeds or Coreopsis; pinks in their sweet odors and varied colors; foxgloves (*Digitalis*); fleabanes (*Erigeron*); cranesbills (*Geranium*); blanket-flowers or Gaillardias, in wondrous combinations of color; cross-wort (*Crucianellas*); Primulas; evening primroses (*Oenothera*), profuse in their golden shades; spider-worts (*Tradescantia*) and day-lilies (*Hemerocallis*).

Yet the above are but a smattering of the wealth of herbaceous plants for the month of June. Three families have not been mentioned as yet and are surely indispensable. I refer to peonies with their wondrous variety in color, size, and shape, irises in their marvelous range of color, and Pyrethrums which also seem to have reached their limit of improvement. Surely we have much to anticipate in our gardening of the future if improvement is to continue as it has in the past fifty years.

July ushers in the sweet chestnut with its wealth of yellow, clustered flowers showing to advantage against the glossy green foliage. Our landscape gains new interest during its period of bloom. Catalpas, too, are coming into their perfection and rival the horse-chestnut of the previous month in the size, coloring, and abundance of its flowers. Sumacs also are interesting though of more subdued color, and late in the month the Chinese pagoda tree (*Sophora*) produces abundantly very large open panicles of creamy white flowers. Last of all the Japanese varnish tree (*Koelreuteria*) attracts attention with its large showy open panicles of bright yellow flowers contrasting effectively with its richly varnished foliage. In shrubs July is well provided with the dyer's broom (*Genista tinctoria*) which gives the vicinity of Salem and Marblehead distinction in its golden tinge to the land-

scape; intolerable nuisance to the farmer, but a thing of beauty to the artist.

Our swamps are fragrant with the honeysuckle azalea (*Azalea viscosa*), the sweet pepper-bush (*Clethra alnifolia*), and the cool woods of the north still have the mountain laurel. The shrubby cinquefoil or hardhack (*Potentilla*) is equally effective from the utilitarian and artistic standpoint in the western part of the state. The buttonball (*Cephalanthus*) is showy now and we are to be congratulated that we are commencing to appreciate its midsummer beauty. Our home grounds are happy with their collection of Adam's needles or Yuccas, the white kerria (*Rhodotypos*), bladder sennas (*Colutea*), St. John's-worts (*Hypericum*), sorrel tree (*Oxydendrum*), that old but beautiful dwarf horse-chestnut (*Æsculus parviflora*), and the climbing clematis and honeysuckles. In the flower border the peonies are still making a lingering effect in a vain effort to vanquish its coming rival, the phlox, which from now on till the time of Michaelmas daisies and chrysanthemums will have first place. Japanese irises, however, hold temporary sway with their gorgeous coloring and immense size of bloom. Larkspurs, too, are old and indispensable favorites with their showy spikes of rich, deep hued flowers.

Marshmallows (*Hibiscus*) are now wondrous in the size of their richly colored flowers, and the cardinal-flower (*Lobelia cardinalis*) is most brilliant in its coloring. Of the lesser lights of the garden plume poppies (*bocconia*), bowman's-root (*Gillenia*), chalk-plant (*Gypsophila*), valerian (*Centranthus*), Oswego tea (*Monarda didyma*), giant harebell (*Platycodon*), Dictamnus, and blackberry-lily (*Belemcanda*) are all showy in bright hues of color. Gaillardias still show their varied flowers and Cassia, Anthemis, Asclepias, and Centaurea add their variety. Yellow flowers now become over abundant. Helianthus, Rudbeckias or ox-eye daisies, Coreopsis, and Helenium all bearing yellow flowers in profusion. Fortunately, by carefully selecting color, variety can be obtained from the list above or to it can be added the white or giant daisy (*Pyrethrum uliginosum*), sea hollies (*Eryngium*), Echinops, and speedwells (*Veronica*). The tender plants are now gaining strength to add in varied color of flower and foliage to meet all needs. In bulbs, lilies, Hall's amaryllis

(*Lycoris squamigera*), are at their best, and in the lilies, at least, give great range in beauty of color and form of flower.

August has few flowering trees, the Aralias standing by themselves in creating a flowering effect at this period. Their huge masses of white flowers show to great advantage against the subtropical foliage. In shrubs the New Jersey tea (*Ceanothus*) is pleasing in its late blooming effect. Clematis vines are showy in their abundant bloom. Hydrangeas, however, are indispensable in their showy effect. Yellow-flowered herbs predominate including sun-flowers (*Helianthus*), and sneezeworts (*Helenium* and *Heliopsis*). There is really ample variety of color, however, in a selection of the false chamomiles (*Boltonia*), plantain lilies (*Funkia*), Eupatoriums, meadow rues (*Thalictrum*), and Kniphofias. Phlox, too, gives a wide range of color and the Michaelmas daisies or asters commence to appear at this time. Stoke's aster (*Stokesia cyanea*) gives a large range in shades of white, purple, and blue flowers in the hybrid forms between the New England, the New York, and other species of this family. The above with Sedums, Veronicas, Lythrums, Saponarias, Lysimachias, and Stachys give us abundant hardy flowers with which to make August a show month of the year in the flower border.

September arrives with but a single notable tree for showy bloom and that requiring care and shelter to obtain results. I refer to that rare and choice loblolly bay (*Gordonia Lasianthus Altamaha*). Probably the specimen plant in the Arnold Arboretum will remain the best of its kind for a long period to come. Its beautifully showy, fragrant white flowers are borne nearly to frost. We do occasionally have second crops of flowers from the white bay (*Magnolia glauca*) that appear in September. In shrubs Baccharis the groundsel tree, Hydrangeas, and the showy sweet pea shrub (*Desmodium* or *Lespedeza Sieboldi*) practically comprise the list. The first with white silky seed vessels that look like flowers, the second with its large showy heads of white blooms, and the last with its immense profusion of rich purple flowers often lasting till hard frost. Phloxes are showing their second bloom if they have not been allowed to go to seed. Asters are in greatest profusion of kinds and in all shades of blue, purple, and of the purest white. Iron weeds (*Vernonia*) are

showy with their broad heads of deep purple. Blazing stars (*Liatris*) are effective too in their purple shades. In yellow flowers there are plenty of sunflowers yet, and compass-plants (*Silphium*) are in several distinct forms. Gaillardias still persist in blooming, and the goldenrods have been and are still making a brilliant show. The flame-flowers are defying the frost and chrysanthemums are making great promise of bloom provided weather conditions do not become too severe to enable the maturing of the flowers. Leadwort (*Ceratostigma plumbaginoides*) is a carpet of richest blue, and the beautiful Japanese windflower (*Anemone Japonica*) is at its best. *Boltonia latisquama*, too, is still a mass of pale, lavender-blue flowers particularly effective for cutting.

October and November according to the mildness of the season continue the flower effect of September. Chrysanthemums should be at their best as should also the Japanese anemones. In the woods the witch hazel gives a glow of color with its clouds of deep yellow flowers; but flowering time is over and fruiting time is at hand and attention must be diverted to this direction until the scarlet maple commences the round again.

James H. Bowditch, the chairman, remarked that those present must now know just what to plant in their gardens.

Adin A. Hixon stated that the principal thing in gardening was to know the conditions of your soil, and this was necessary in order to know what to plant to get satisfactory results. He said that it was useless to try to grow rhododendrons, for instance, in a light soil with a gravelly subsoil. The Siberian crab would give one as good satisfaction as anything that could be set out.

He was often asked what to set out around seashore cottages, and advised the transplanting of the native ferns, plants and shrubs of the immediate neighborhood. Amidst the ferns he recommended the planting of tuberous begonias which he said were the easiest and cheapest flowers to grow; gladioli also were very effective.

One of the greatest difficulties to be met with in gardening was the trouble with insect pests. This trouble could be largely cured by the plentiful use of soap and water, which he consid-

ered fully as efficient as many of the higher cost remedies. It would kill two-thirds of all the insect pests of flowers if used in season.

Edward O. Orpet spoke favorably of the use of soap as an insecticide and especially of ivory soap which he said owed its peculiar value for this purpose to the fact that it was made of vegetable oils rather than of animal fat, and that it contained no free alkali. He gave as a formula for its use: one cake to six pails of water. He knew of numerous species of insects that this solution would kill.

Mr. Orpet said he thought that the best results could be obtained in the garden with bulbs and annuals, and that wonderful progress had been made in recent years in the development of desirable annuals. He mentioned especially the asters, Salpiglossis, Schizanthus, and the *Nicotiana Sanderae*, a recent, valuable acquisition.

T. D. Hatfield spoke of planting rhododendrons in gravelly soil, which he managed to fit for these shrubs by putting in an abundance of leaf mold.

Mr. Manning said that with rhododendrons it was not so much a question of soil as it was of exposures; they should be planted in partial shade and protected by wind-breaks. Forty per cent of rhododendrons die from lack of proper conditions, and alternate freezing and thawing cause more destruction than anything else.

Mr. Hixon reiterated a warning not to plant rhododendrons in a gravelly soil.

Mr. Orpet said that gravelly ground was an unsuitable location for rhododendrons, and also if there was lime in the soil they could not be grown. Ericaceous plants generally could not be grown in soil impregnated with lime, which accounted for the fact of the laurel and arbutus being so abundant in some places and not to be found in other localities.

Thaddeus Friend said he was an amateur and had come into the possession of a tract of barren land at Cape Ann, Massachusetts, which he desired to cover with trees, shrubs and flowers at a small expense. The first thing he did was to get rid of the stones abundantly distributed over the surface. This he accomplished by planning a macadamized road through the land, and

digging up the soil he had dumped the rocks into the excavation.

He then went into the woods and transplanted many native herbaceous plants, trees, and shrubs. The first plant he set out was the common yellow lily with which he was very successful for it increased rapidly and he grew specimens with thirteen blooms and flowers six inches across. He planted snowdrops under the ledges and had them flower February 22. He also had success with the moosewood out of the woods.

Ashes had been referred to as a fertilizer and he believed in it. He had put on his land the proportion of two tons of ashes and one ton of bone and it had made great crops. He grew on it a squash which weighed 97 pounds and corn also did well. He had found a wild rose with very few thorns on the stems which he had transplanted with pleasing results.

In all he had set out 6000 trees, among them 100 Oregon pines, and his knowledge of the subject had come wholly from practice and experience.

Robert Cameron asked Mr. Manning to name the best twelve hardy trees, shrubs, and perennial flowering plants suitable for estates and gardens about Boston.

In response to this request Mr. Manning gave the following lists:

Best Twelve Hardy Trees.

Yellow Wood (*Cladrastis tinctoria*). Unquestionably our most beautiful tree in flower.

Wier's Cut-Leaf Maple. For rapid, graceful growth.

Horse Chestnut (*Æsculus Hippocastanum*).

Rivers' Purple Beech. For its brilliant foliage.

Chinese Magnolia (*Magnolia Soulangeana*). Very effective in early spring.

Pyrus floribunda, var. Hallii. There should be on an estate at least one specimen of the flowering crab.

Catalpa. For its showy bloom in July.

American Elm. There is no tree more graceful.

Norway Maple. For sturdy growth and longevity.

Pin Oak. An oak should not be left out of the list and there is nothing finer than the pin oak (*Quercus palustris*).

Tulip Tree. This should be one of the twelve.

Varnish Tree (*Koelreuteria paniculata*). This tree although structurally not imposing is valuable on account of its summer flowering habit.

Best Twelve Hardy Shrubs.

Double Flowered Plum (*Prunus triloba*). Our showiest, early flowering plum. April and May. Grows to six or twelve feet.

Golden Bell (*Forsythia Fortuni*). With its wealth of yellow flowers.

Spiraea Van Houttei. A graceful, hardy shrub, bearing dense racemes of white flowers early in the season.

Early Mock Orange (*Philadelphus coronarius*). More graceful than the larger flowered *P. speciosissimus*.

Japanese Snowball (*Viburnum plicatum*). Perhaps a little tender for an unusually severe winter.

Dwarf Horse Chestnut (*Pavia macrostachya*).

Honeysuckle. The honeysuckles are all fine, but considering the berry-bearing effect through to the fall, *Lonicera Morrowii* is perhaps to be chosen.

Russian Rose (*Rosa rugosa*). Its showy fruit hardly less decorative than its large single flower.

Hydrangea (*Hydrangea paniculata*). One must choose here the hardy species rather than those of greater grace or florif-erousness.

Thunberg's Barberry. Nothing better for a hedge.

Deutzia gracilis.

Lilac. The best is the Rouen lilac (*Syringa Rothomagensis*).

Best Twelve Perennial Plants.

English Cowslip (*Primula officinalis*). The best old-fashioned perennial for early bloom.

Speedwell. (*Veronica amethystina*). Some of the early blooming speedwells, as this species, will give a perfect sheet of blue inflorescence early in the season.

Lily of the Valley. Possesses so much merit that it must be included in the list.

Iris. (*Iris Florentina*). The German varieties of iris are preferable.

Yellow Day Lily. (*Hemerocallis flava*).

Larkspur.

Phlox. Varieties can be planted to give flower from April to October.

Peony. The best red is *Paeonia officinalis* and the best double white is *P. festiva maxima.*

Lupine. (*Lupinus polyphyllus*). In early June; but unfortunately does not always retain its perennial habit.

Gaillardia.

Aster. The aster Lady Trevellyn is very recommendable.

Veronica (*Veronica longifolia*).

or

Sunflower. There was none better than the ten-petaled *Helianthus decapetalus.*

Mr. Manning stated that there were three thousand varieties of hardy perennials catalogued by nurserymen and to select twelve of them was a difficult proposition.

Kenneth Finlayson advised the growing of *Spiraea Van Houttei* rather than *S. Thunbergii* which in his experience was not good after three years.

SOME ASPECTS OF HARDY FLOWER CULTURE.

BY A. HERRINGTON, MADISON, N. J.

Read before the society, March 4, 1905.

Notwithstanding all that has been written in the past about style and design, there is no garden so beautiful as that untrammeled by the application of needless geometry to its plan and planting. A certain formality may be necessary and right about the house, but those who tell us the garden as a whole should be a thing of formal design are enemies to true gardening, not perhaps of wilful intention, but from lack of knowledge or inability to see and appreciate how their much vaunted formality circumscribes or prohibits the possibility of good gardening by limiting us to the use of a few forms and types of vegetation adapted to the formal scheme.

Hence the floral poverty and meagre beauty of too many so-called gardens, wherein no place can be found for the planting of those beautiful flowers that tell the story of the year from the moment the frost relinquishes its grip of the earth till the time when vegetation again goes to its winter rest. In many gardens where place can be found for hosts of beautiful hardy flowers, they are not to be seen there because of the prevalent erroneous notions that the flower garden is a thing apart of itself, a set arrangement of cultivated beds and borders formal or otherwise.

Some attempt is made to display floral beauty, some good results are seen, but so long as our efforts begin and end there we are merely prospecting; we have not discovered the actual mine of floral treasure whose outcroppings are not thus localized.

This is especially true of hardy flowers, and when we come to a right understanding of the subject we ought to find in hardy vegetation the main source of garden embellishment, just as in our permanent plantations we use only hardy trees and shrubs.

The purpose in view, therefore, is to suggest means and methods of widening the scope of our efforts, to suggest possibilities for growing and enjoying the beauty of more of the vast floral treasures garnered from many temperate parts of the globe, and all these further amplified by the substantial additions to the original types that have been obtained under cultivation.

The flower gardening that is here advocated goes beyond the prim beds and borders, although admitting the propriety and necessity of these in their place. It advocates getting as near to nature as the garden will permit; in other words, doing in many ways what nature does, with a tolerable certainty of good results. It will give us flowers on the hillside, flowers in the valley, flowers in the open sunlight or in the shade, in the grass or in the woodland; in short, it will enable us to have flowers in hundreds of places that surround the home, heretofore only devoid of them by reason of our neglect to plant, and what is perhaps of great importance to many, at a minimun cost of future care and keeping after the original outlay. Let us look for a moment at facts that annually confront us in regard to our methods of planting certain flowers, and then consider other ways of planting the same flowers that are prettier and more permanent. Take for the first example the

Spring flowering bulbs. What a floral host they make! Rich in varied beauty; snowdrop, snowflake Scilla, Chionodoxa, Erythroniums, Anemones, fritillaries, hyacinths, tulips, and daffodils. How do we grow these? Generally in beds and borders, planted with mathematical precision or worked into those spectacular designs for making which we seem to have a special aptitude. The effect is striking, somewhat pleasing, and it may be no better way could be devised for these particular types; but such hyacinths and tulips as we see are florist creations, therefore need cultural care. The error that is commonly made is in supposing or assuming that they adequately represent what is possible with spring bulbs in the garden.

Most of the spring bulbous flowers need no cultivation at all, in the sense in which we understand or apply that word. They are children of nature, wild species, abounding still in grassy meadows or leafy woods. We too can plant them under condi-

tions of similarity. Snowdrop and crocus, Scillas and dog's-tooth violets are perfectly happy and infinitely more at home planted in association with trees and shrubs. They often perish from disease, if not killed by disturbance in the deeply dug manured border, yet associated with trees and shrubs and left undisturbed they will go on from year to year increasing and multiplying in numbers and beauty. A colony of the beautiful blue *Scilla Sibirica* that comes up each spring may be cited. A few bulbs were planted originally among some *Rosa rugosa* ten years ago, and nothing has been done since but to annually prune the roses. Each spring the Scillas appear and blossom profusely. They have greatly increased, not only by natural multiplication of the bulbs, but the flowers seed, which ripens and germinates, and the offspring grow on and flower in due course. A week or ten days this Scilla picture lasts and they retire to rest beneath a thicket of rose growth unthought of and forgotten, it may be, till they reappear the following year. Does not this suggest a pretty way of having huge colonies of spring bulbs in the garden? Gems of beauty that we commonly ignore because they are not adapted for use in conventional methods of flower gardening. Doubtless, long before a flower has graced the garden in spring you have gone into the woods and worshipped the spring beauty, the hepatica, and the yellow dog's-tooth violet. They need no culture and know no care, and if we wish it in just the same way we can make permanent additions to the interest and beauty of the garden by naturalizing these gems from the woods and meadows of Europe and Asia.

As these early harbingers of spring fade away the floral procession is continued with flowers of greater stature and more striking beauty. Of these let us look for a while at the great group of daffodils. It is essentially a European family, but they need not be strangers to our gardens. The double Von Sion and Emperor and Horsfieldii we sometimes see in beds after the usual fashion. The home of the daffodil is in the grass; in fact, some of the prettiest species refuse to live more than a year or two in cultivated ground, yet in the same garden planted in grass, continue from year to year with proportionate increase. May we not have a grass garden too, and plant therein some of these

flowers? All that you require is a grassy spot that need not be mown till midsummer. The smallest nook can be prettily adorned and if you have an acre or two to devote to the purpose the possibilities are immense. To stand knee-deep in grass and daffodils in May suggests surely a desirable and delightful aspect of hardy flower gardening, and one that once created will likewise, without further care, increase in extent and beauty year after year. Planting is a simple matter of lifting the sod and underlying soil, dropping in the bulbs and replacing the soil and sod, taking care to plant the groups in a natural or irregular way, as any formality of arrangement in a grass garden would look most inappropriate. Not only the trumpet daffodils, but the graceful star and the lovely poet's narcissus are all amenable to grass planting, while some of the gems like Johnstoni and Queen of Spain can only be permanently established in the grass. Partial shade, if available, will prolong the life of the flowers so that proximity to large trees might be chosen, or a grove of trees not too close to one another might be made a daffodil garden.

A word concerning tulips. The familiar type is that of the garden varieties of which there are hundreds, important spring flowers too, but scattered through Europe and Asia is a score or more of beautiful and most variable species that can be semi-naturalized about the shrubbery and plantations, and, if planted, will bring to the garden new forms and types of tulip beauty.

For example, there is the sweet scented yellow *Tulipa sylvestris* of Great Britain, a charming variety to naturalize; others with branched stems bearing several flowers, novel in appearance to those who only have seen the solitary-flowered, ordinary tulip. *Tulipa proestans* from Bokhara is a fine species with sometimes as many as five flowers, of a bright orange red, on a branched stem 12 to 15 inches high; and *Tulipa Persica* from Persia is another branching tulip with brilliant yellow bronze marked flowers. In all the tulip family, wild or cultivated forms, few can compare in gorgeous beauty to *Tulipa Greigii*, and in the opposite direction what a pretty gem we have in *T. Clusiana*, the lady tulip, its flowers cherry red externally, white internally, most refined in beauty, yet a pure child of nature, disliking rich garden soil, but happy and long-lived in stony ground among roots of trees and

shrubs. Besides these are many others and if you would take the species and make a tulip garden of them, tulip time would bring you such varied beauty and refinement of form that you would no longer be satisfied, in fact, you would wonder why you had for so long been content with the ordinary garden tulip.

Spring flowering perennial plants. The bulbs, numerous as they are, only comprise a part of spring's contribution to the floral gayety of the earth. Another type of vegetation, of perennial characteristics, offers to the garden a wealth of beautiful material. Alpine flowers we used to call them, and a rockery or rock garden, was considered an essential adjunct, in fact a necessity before attempting their cultivation. Too often they perished from drought or starvation when planted upon ill-constructed rockeries. Many of these gems from the high mountain ranges of the world are just as happy if suitably planted and cared for upon the level ground such as the garden affords. Because they are indigenous to high altitudes it does not follow they must be strangers to gardens. These little gems are there because they are able to exist and raise their tiny heads in a zone where storms allow no life of tree and shrub. In association with trees and shrubs they would perish in the unequal conflict, but with the open sky above them they live and endure continuously — examples of the fitness with which all things are ordered in nature.

From these lowly types of high mountain life we can gather an assemblage of pretty, easily grown plants and make a spring garden of exceeding beauty. Here are some of the important families: Alyssum, Arabis, Aubrietia, Phlox, Sedum, Saxifrage, Sempervivum, Iberis, Epimedium, Silene, Pulmonaria, Primula, Armeria and many others.

To see and enjoy these to the fullest measure we must not be content with them as units, we should have them in hundreds and thousands if room permits. The cushion pink or dwarf phlox is often seen in gardens. It covers the ground with a mossy carpet of perennial verdure, but what a picture in spring when it covers itself with a mantle of white, or rose, or pink, according to variety. This is but one. Suppose you get an association of types allied in needs and characteristics and see what a spring picture can be created therefrom. Some of them are admirable

for planting in broad masses as a fringe or margin to shrub plantations; may even be used as carpet plants where choice shrubs stand widely apart; but beyond this they justify the making of a special feature, especially where the topography or geological formations permit. Take, for example, a spot overlying rock with rocky outcroppings here and there, but some depth of soil between; it is ideal for the purpose. Again, upon hundreds of places there yet remain those boulder reminders of the glacial epoch. These can be brought into use and help in forming a rock garden that will be satisfactory, a delight instead of an eyesore.

Instead of piling rocks high in heaps with the interstices filled with soil that is too often dry as dust, an altogether inadequate method for a country of great summer heat and limited rainfall, these same stones may be used to assist in correcting or ameliorating adverse conditions of climate. Doubtless, you have often placed your hand upon a rock or stone on a hot summer day and noted its absorbency of heat. Lift a rock or stone on a hot day and place your hand on the ground where it rested and note how cool the ground is in comparison, not only with the rock but with the surrounding bare earth. In like manner rocks may be made of assistance in growing some of these choice spring flowers even upon level ground, some of the smaller ones lying on the surface; others, larger, buried one-half or two-thirds, furnishing protection and a cool root run to the plants clustered about them. Rock gardens have been failures because the rocks were in excess or misused, but the proper use of them in bed or border or on a sunny slope subordinated to the purpose in view, as aids to cultivation, opens the way to the creating of a garden feature of permanent interest and perennial charm.

Late spring and early summer flowers. The continuing of the floral procession brings next to view the taller plants with larger flowers, and a veritable host is at our command.

How can we marshal such a force? How can we hold an adequate review of Flora's army within the limits of the average garden? It is not possible. The amassing of a collection of hardy herbaceous plants in a long mixed border is at its best a mere collection of units, yet collections more or less in number mainly

represent the extent of hardy flower culture. The collection has its place but it cannot be made a strong feature of the garden. If our aim is to create pictures in the garden landscape, effects of color, distinctive features in different parts, selections not collections must be the rule. As soon as we depart from the collective method and take up the selective the availability of hardy flowers for garden decoration is enormously increased. For example, take some special class of plants suited to a chosen spot, both from a cultural standpoint and with relation to effect in the garden landscape. Thoroughly prepare the situation and plant it and you can create a flower feature that will stand for five to ten years with only the ordinary care of keeping free from weeds.

An iris garden. Suppose we decide to make an iris garden. Here is a family worthy of ten times the attention it gets in the ordinary garden, and no matter how much space you have at command, you can plant half an acre or more, if the space justifies so extensive a planting, and yet show difference of variety in every square rod but fitness of association throughout the whole arrangement. Instead of a mixed medley of everything that flowers at iris time, consider irises only and see what the family has available for such planting. You are familiar with them; you will concede irises in point of beauty stand related to all other hardy flowers, as the Cattleyas do to the orchid family, peerless and unsurpassable in form, color, effect, the highest type of attainable flower beauty.

Do you know that you can have an iris garden that will give you profuse and unbroken succession of loveliness from April well on into July, and that too without using the family in its entirety, as some types, like the cushion irises and the bulbous class, need separate special treatment. You must have seen some of our meadows blue with native iris in groups of an acre or more, a fine display at flowering time but of one species only.

In the iris garden we can have an early beginning, a continuous succession, and a late ending. An appropriate setting to, and background for, an iris garden is a belt or plantation of shrubs, planting the irises in bold groups in well-prepared soil in the foreground. The dwarf growers are the early bloomers, and height of growth and time of flowering are in such perfect harmony there need be nothing incongruous in the arrangement.

As a margin to the grouping we have the choice of several species, each in variety, some of them commencing to bloom in April, even before frost has entirely left us, as in *Iris pumila*. This, as the name implies, is dwarf, attains a height of only eight or ten inches, yet flowers with equal profusion to those that succeed it. In color its varieties are white, pale yellow, violet, purple, and the most exquisite of all the sky blue form named *coerulea*.

Iris Olbiensis is the type of a similar dwarf group, its best varieties being *grandiflora*, deep violet purple; *pallida*, creamy white, *sulphurea grandiflora*, yellow; and Socrates, rich purple. *Iris Chamaeiris* is another dwarf group embracing nearly a dozen varieties in shades of yellow, blue, and purple. These are all plentiful and cheap and unquestionably hardy as they come from the Crimean country. Next in succession come the tall bearded flag irises. Of these there are hundreds of varieties in cultivation, as variable as they are pretty, so there is no dearth of choice. They have been classified into groups and of these the Germanica group flowers first in May. The common blue needs no special mention but besides it there is a white form and *atropurpurea*, deep purple, *macrantha*, a giant deep blue-flowered species and Purple King. In June the whole family of bearded irises is with us forming six distinct groups and every group replete with handsome varieties. Taking first the Amoena section; in this the standards or upright petals are white, but the falls or drooping petals vary from white to purple, according to kind. A selection must begin with Victorine, an old but still one of the most charming varieties, Mrs. H. Darwin, and Thorbeck, with a dozen more in existence to amplify the group if space permits. The Pallida section offers some of extreme beauty, in fact it is doubtful if among the hundreds of bearded irises there is one quite as beautiful as *pallida Dalmatica*, its flowers of great size, of a deep clear lavender color, and with a delicious perfume. It should be planted in big bold masses. Celeste is a pretty azure blue, and Queen of May is in a class by itself, so distinct from every other kind, with flowers of a rosy-mauve color, probably as near pink as is obtainable in this type of iris. This is a select trio from a class of at least two dozen.

The Neglecta section is characterized by varieties having standards ranging from lavender to deep purple, and is equally numerous in variety. In this belongs the pretty Cottage Maid, Fairy Queen, and Perfection. This last is especially handsome, having light blue standards and deep violet falls. The Plicata section is a small one but contains an iris fit for the choicest collection in Mme. Chereau which has white standards and falls, quaintly and prettily marked with horizontal lines of blue, forming a fringe or margin around the edges of the petals. This odd manner of color markings is the distinguishing feature of the group. A very large section is that known as the Squalens, and it embraces an entirely different color scheme, the standards being fawn, or of a bronze or copper hue. Out of nearly a half-hundred to select from special mention must be made of Jacquiniana, a striking beauty, the standards like burnished copper and the falls rich maroon, in appearance and texture like unto velvet. Another great section is the Variegata, in which the standards are always of some shade of yellow, whilst the falls of the various kinds cover the whole range of iris color; Gracchus, Darius, Louis Meyer, and Maori King are a select quartet from this numerous group. Other bearded irises given specific rank are *Florentina*, white and an early bloomer, with varieties, *I. albians* and Princess of Wales, white, large and handsome; *Cypriana* in several varieties in lovely shades of blue; *flavescens*, also varied in yellow tints; and *sambucina* in bronzy hues.

All the irises so far enumerated are in the bearded group. A succession to them in time of flowering is given with another beardless group, rich in species and varieties. Our native irises belong to this group, but they need not be considered, being greatly surpassed in beauty by those from other lands.

An important family that bursts into a blaze of glory after the bearded kinds have faded is the Sibirica group. The typical species *I. Sibirica* grows three feet high, has narrow grassy leaves, and small but exceedingly numerous bright blue flowers. There are a dozen good varieties; one white and one of larger size and great beauty are *orientalis* and George Wallace. *Iris spuria* is another good species, bright lilac-blue, and has several distinct varieties as well, especially that named Celestial. *Iris ochroleuca*

gigantea is the giant of the family, throwing up its flower stems to a height of nearly six feet, the flowers white and yellow, whilst *I. Monnieri* and *I. aurea* are two pure yellow tall growing species of more than ordinary interest.

Several hybrids, too, between *Monnieri* and *spuria*, classified under the name Monspur are among the best late irises. The iris season finishes with the flowering of the Japanese kinds, forms innumerable and of exceeding variation in the species *laevigata* or *Kaempferi*, and what a glorious climax to the whole. There is no need to describe these, only to say, although semi-aquatic they appear just as much at home right out in the open sunlight in the ordinary soil of the garden, if it is of fair depth, so that we need not be prevented from planting these in the iris garden contiguous to, or commingled with, the many types before enumerated.

The bulbous irises and that quaintly beautiful class to which the mourning iris, *Susiana*, belongs have been intentionally omitted from this suggested iris garden because they call for special treatment and particular choice of situation. Given the right conditions, a striking feature might be made of these alone but not quite as long lasting.

The usual mixed planting of hardy flowers is often made in some more or less obscure spot, for the reason that as the varied subjects pass out of flower the appearance of the border is not of the best. There is nothing detrimental in the aspect of the iris garden as all have good, persistent foliage which alone is not lacking beauty from the time the green spears are thrust upwards in spring till they turn yellow and decay in the fall.

Peonies and lilies, happy in appropriate association, replete in variety, may be suggested for another special extensive planting, a garden of them in fact. The peony needs no eulogium here as it is one of the hardiest and best appreciated of hardy garden flowers, something you can plant and leave alone for a number of years. There is an unlimited choice from which to plant wisely and well. A careful selection of the best should be made, not however forgetting some of the species like the Chinese *albiflora* with its great single, white flowers, as large as a plate, and varieties in other colors that have been raised from it. Other

single flowered species, natives of Europe and their varieties are important too. The peony season is not a long one. It is shorter than it need be because we have given most attention to the *albiflora* varieties that come in June. The European representatives of the family are May flowering so that starting with these and with a selection of the Chinese peonies following in succession, a properly planted peony garden should be gay with flowers for at least six weeks. Whilst peonies are not averse to the open sunlight, it should be borne in mind that they do remarkably well in the shade, even quite near to large trees, so that a peony garden might be made a great success in a position where an iris garden, if attempted, would be a failure.

Given a generous preparation at the start, you can make a great plantation of peonies with the assurance, that beyond keeping them clean and giving an occasional top dressing, that plantation may remain undisturbed for a period of at least ten years. What a contrast in comparison with the costly, laborious operations pursued in flower gardening as generally practised, involving the entire replanting of large areas certainly once, and if spring flowers are desired, twice a year. Is it any wonder that numbers of people who have gardens forego the costly pleasure of such flower gardening?

With the passing of the peony bloom naught remains for the balance of the year but its own great tufts of luxurious leafage, hence the suggestion to plant lilies with the peonies. To give ample room for development it is essential that we plant our peonies at least a yard apart, as by the time they attain full growth they will completely hide the ground, yet there will be much unoccupied ground beneath or between the great spreading leaves. This is just the condition desired by many lilies. They raise their heads of glorious blossom high in the air — much higher than any peony grows — whilst the peony foliage overspreading and shading the ground furnishes comfort, shelter and protection from burning sun to the lily roots. In this association of peony and lily we have practical adaptability as well as artistic fitness, and the lily family suffices to continue the flowering interest in the garden almost to the end of the garden year. The lily season opens before the peony season has passed, with the

flowering of *Lilium elegans*. This is a dwarf lily, to be had in a score or more distinct varieties, and as they only grow from one to two feet in height they should be grouped in the immediate foreground of the planting. Next comes the rich orange lily, *L. croceum*, attaining a height of five feet, with the scarlet turk's-cap, *Lilium Chalcedonicum*, the Umbellatum group, the Martagon group, and *Lilium testaceum* — all July flowering kinds. August will bring the tiger lily in several distinct varieties, also *Lilium Henryi*, a giant among lilies, easily grown and gracefully beautiful. Last comes the Speciosum group of lilies as a fitting termination of the long succession. Only the cheap, easily grown lilies have been enumerated. Many others of great interest and beauty might be added, the Auratum group, for example, that would need a little more cultural care and attention.

Summer and autumn perennials. — Numerous other groups of flowers have strong claims for consideration. Suppose you have a good deep fertile soil that will grow good Delphiniums, why not plant a group of a hundred or more. In all Flora's fair family there are none more stately, and what a range of color they present in every conceivable shade of blue. Perhaps your ground is poor and shallow, then take the Yuccas, *filamentosa* and *flaccida*, and plant these in bold broad masses. In New Jersey and doubtless elsewhere there are by the country roadsides great groups of the tawny day lily, *Hemerocallis fulva*, apparently wild; and gorgeous they look with thousands of flowers open at one time on a July day. This is a Chinese plant but the way it has become naturalized would easily lead one into the belief it was a native of our land. Does not this suggest a similar free use of the other species of Hemerocallis in our gardens in association with tree and shrub in a wild, free way? Bocconia, Crambe, Ferula, Echinops, and Polygonum are names that, to those who know the plants that bear them, recall plants of great size and handsome character, too coarse perhaps for the choice collection, but given a place in the tree and shrub plantations they will give the garden another aspect of beautiful, hardy vegetation. As summer verges into autumn other great groups continue the floral story of the year. To cite a few, there are Phlox, Helianthus, Rudbeckia, Helenium, Aster, Kniphofia, and others all worthy of the same bold generous treatment.

In short, hardy-flower culture presents so many aspects, provides us with material suitable to every kind of soil, condition, and environment, flowers for spring, summer, and fall, in unlimited variety, as to make utterly inexcusable the generally prevalent monotony of so called flower gardening. Instead of practicing universal imitativeness in the display of tender summer flowers, we should make original, adaptive plantings of those that are hardy and permanent, and this we must do with the knowledge that no garden can do justice to them all.

Between planting for beautiful effects and planting for collective interest, or botanical study, a wide gulf exists. It must be admitted that the very much mixed border of hardy flowers that is usually seen where hardy flowers find favor at all, is at its best little more than a botanical collection of living specimens. The true consideration of hardy flowers is governed by their relationship and fitness to all parts of the garden except the roads we walk upon and the essential lawns that we mow.

THE RETURN TO NATURE.

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Abstract of a lecture delivered before the Society, March 11, 1905.

Truth and beauty are qualities of the universal ideal toward which the growing soul is ever tending. Always, man finds in water, land, and sky the outward expression of his own soul, where alone truth and beauty dwell. In the earliest stage of religion, the gods were friendly, manifesting themselves to their mortal children in blossom and leaf, in the ripening wheat and the golden corn. The loveliest stories of the mythopoetic fancy have to do with the gods whose love of man showed itself in their kindly relations to his interests, as a hunter, a tiller of the soil, a shepherd, or a navigator. The fabled golden age was in truth a reality wherein man's attitude toward nature was one of faith and worship; hence his life was serene and filled with content. He had infinite trust in the fruitfulness of the earth, infinite belief in the beneficence of the spirits that brought life and death, that ensphered the dew for his sake, enriched the grass, fattened the kine, and empurpled the southern slopes of fall with cordial grapes.

At just what period there was born in the race the consciousness that nature was not only not divine, nor trustworthy, nor generous, but cruel, capricious, and tyrannical, history does not and cannot say; but it was inevitable that some such period of disillusion should come, and that when it did come man should change from a worshiper to a doubter, from a confiding child to a bitter accuser, from a joyful co-laborer in the work of the universe, to a drudge earning his bread by the sweat of his brow.

Alas! this has been for the most part the attitude of man from immemorial times, and this same feeling of nature's tyranny and of man's enmity has driven entire populations in days past to seek

their bread in cities, even as it is driving them from the prairie and the uplands today, to the reeking factory towns and the intolerable tenements. Savage men and women struggled with nature to wrest from her food, clothing, and shelter. In the pastoral stage of civilization men and women worked side by side in the open, in order to force from nature the necessities of life. In the agricultural stage, farming was the chief occupation though the men, in addition, often followed the trades of shoemaker, blacksmith, carpenter, etc., and the women worked in the dairy, cared for the poultry, were the bakers and brewers, the dyers, spinners, and weavers. Both men and women by force of circumstances had eye, ear, and hand fitted to do with precision the task required in order to support life.

We are now in the beginning of another epoch-marking change, for the race in its upward climb is entering the industrial stage of civilization, but the warfare does not cease. Domestic production has given place to factory production, and, in consequence, men, women, and children have left the farm to work in the factories. They are crowding into the cities to live in an environment of brick and mortar, where sordid surroundings too often crush out the impulse toward a higher life. In these early years of industrialism, as in the past, the undeveloped soul of man fails to see in the glories of sunset sky and the blue depths of heaven the joys of existence. The poets have always been seers and throughout the ages have called man's attention to the wealth and prodigality of beauty everywhere in evidence, and have dwelt upon the perfection attainable by man when he should see that "nature is but a name for an effect whose cause is God." In the history of human progress, however, the black and bitter winter of unrest, discontent, and change always heralds the gracious springtime with healing in its wings.

Through this period of eclipse we are passing, but as the rainbow in the ancient story stands eternal in the heavens as a proof that seedtime and harvest shall not fail, so we realize that this return to nature is the visible sign of man's awakened consciousness to right ideals, which exists as an irresistible undercurrent, despite the apparent materialism of the age. This makes every thoughtful person watch with the keenest joy, in this swiftly

changing time, the breaking away of multitudes from the shackles of an artificial life, to know the way of peace and pleasantness, by living in harmony with nature and true self-expression. This reaching out for right ideals is not confined to America; it is apparent today in the political awakening of Russia and in the religious revival which is stirring the national heart of Wales.

Channing's description of Thoreau will best define a natural life. He says "We may profitably distinguish between that sham egotism which sets itself above all values, and that loyal faith in our instincts on which all sincere living rests. His life was a healthy utterance, a free and vital progress, joyous and serene, and thus proving its value. If he passed by forms that others held, it was because his time and means were invested elsewhere. To do one thing well, to persevere, to accomplish one thing perfectly, was his faith." The recent interest in Thoreau's writings is one of the most hopeful signs of the times, for it bespeaks the fact that men and women see the inner meaning of his life, and in terms of self begin to realize that loyal faith in one's own instincts is the basis of sincere living.

Thoreau's thought deeply impressed Tolstoi and was one of the influences which led him to renounce the ways of the world to live the life of a peasant on his own estate. The application of this principle does not mean that each one of us must slavishly follow Thoreau and live beside Walden Pond, nor lead the life of a Russian peasant. But it does mean that the best test of the worth of character is to apply Thoreau's standards and ask whether the person lives a contented, joyous life, fills his hours agreeably, is useful in his way, and on the whole achieves his purpose. This is what it means to live a free, spontaneous, and natural life as opposed to the artificial one which holds so many in bondage.

The real significance of this return to nature is the recognition that it is a spiritual movement, for it is revealing man to himself. It will lead to far-reaching economic and industrial changes when the public is aroused to an understanding of its deep underlying meaning. All of the various measures advanced to adjust the troubled conditions of labor and capital are good. Each will act and react upon the other until an industrial mechanism is evolved

that works with automatic perfection. Whether this nicely adjusted instrument produces good or evil results will depend upon the human operators. As are the ideals and ideas of man, so will be the work made manifest. Hence, reformers in all ages have been forced, in the last analysis, to see that human regeneration rests with the individual; that the problem is to substitute unselfish effort in the service of others, for the selfish struggle that seizes everything for one's self.

The settlement of industrial troubles, then, depends largely upon the emphasis placed upon human wealth as opposed to material wealth. As Dr. Henderson so well says, "we need men and women with strong and beautiful bodies, with well-trained heads and hands, with tender and compassionate hearts." If our schools could produce this type of men and women there would be no industrial struggle. Education therefore is the most potent factor in the solution of the problem.

We hear much of the old and the new education. The ideal of the old is external repression; that of the new is internal expression. The difference arises from the emphasis placed upon thought and expression, or, in other words, upon knowledge and character. These functions are inseparable and the struggle today is due to an effort to unite that which should never have been separated. If education be defined as the expansion of consciousness, it is freed from the narrow limitations of the schoolroom and the laboratory and applies to the adult as well as to the child.

In the savage, pastoral, and agricultural stages of civilization, knowledge rested upon experience, instead of being acquired by the indirect method of books. The conditions of life made it impossible to divorce thought and expression. Since the children of today will be the men and women of tomorrow, we must train them to be natural men, with a loyal faith in their instincts, instead of being parrots of other men's thinking. This requires a new educational ideal. The Indian child was taught to use the bow and arrow, to ride the pony, and learned the secrets of the forest. So, too, the little red schoolhouse, sacred to the three R's met the need of the agricultural stage of civilization, because domestic production called forth the activities of the child out of school hours. In this industrial age, both home and business life

have changed and we cannot escape a corresponding change in the school.

The school of former days was an unpretentious building, located amid unattractive surroundings; the furniture was uncomfortable, the walls and ceilings were black and dingy, the apparatus was inadequate. But oftentimes within this school was found a teacher of mature years, possessed of scholarly instincts, who advised and stimulated his pupils though he did not become a companion and associate. Ian Maclaren's picture of Domsie in "Beside the Bonnie Brier Bush" will for all time stand as an ideal of the common school teacher.

The schoolhouse of today is often an architectural feature of the landscape, with attractive decorations and furnishings, and adequate equipment in the way of blackboards, pictures, globes, etc. In many instances the teachers are young, with an absence of professional training, and too often do for the child that which can only be of service when the child does it for himself. He learns devices when he should be discovering and illustrating truth-compelling principles. The strength of the school of yesterday was the personality of the teacher; the school of today is a well-articulated system that needs the energizing force of an inspired teaching body to direct it unto right ends. The school of tomorrow will subordinate external mechanism and elevate personality to its rightful place as the regenerative, constructive power for which the system exists.

No phase of the return to nature is fraught with deeper meaning than the introduction of nature study into the course of study in our public schools. In its evolution it has passed through the various stages of window boxes, school gardens, the utilization of vacant lots for agricultural purposes, and at last the fundamental idea of the school farm. In many places nature study adheres to the school system as a plaster, to be taken on and off at will. In one school it means birds, in another butterflies, in another blossoms and growing things. Why not include nature study in the more comprehensive word, agriculture, and incorporate this as an integral part of an elementary school training? A plant should be studied in its relation to its surroundings and thus bring out its uses and the general plan. This will lead to an

observation of its form, structure, buds and blossoms; the insects and birds, their habits and uses. The study of plant life also requires some knowledge of the soil; its formation, kinds, the crops it will produce, etc. In all of this work the great aim of the teacher should be to lead the child to realize that he lives in a world of beauty and that it is an abiding joy to learn to appreciate it. In so doing he becomes a happy, contented member of society.

A few years ago the progressive teacher put window-boxes in her schoolroom in order to relieve the dreary monotony of an artificial environment and give the child some idea of the beauty of growing things. Then came the day of school gardens. These have flourished in Europe for many years, but have only recently been introduced into America. Massachusetts has taken an active part in this development, fostered largely by the recognition of this movement in the way of prizes and diplomas given by the Massachusetts Horticultural Society. An article in The Commons, by Anne Withington, calls attention to the lack of cohesion in municipal life, and cites garden work in Boston as an example. The writer says: "We have a city forester, with a large staff of workers, and all the materials needed at hand — loam, manure, seeds, implements — and yet it is impossible for the city's teachers to obtain these for the city's children. So it comes about that, while the city provides the land and the children and the teachers, it is left to volunteer organizations — The American Park and Outdoor Art Association, The Civic League, and The Twentieth Century Club — to initiate the work and to bear the expense of preparation of the grounds, implements and seeds, and the cost of supervision. Of course the hope is that ultimately the school authorities will assume responsibility for the garden work, and that it will be incorporated in the school curriculum, like other manual work — nay, some of the enthusiasts have larger hopes. They see in the garden a laboratory wherein many branches of learning, now differentiated, may be correlated and vivified for the child. It is with this end in view that teachers have begun to use the garden in teaching English, arithmetic, geography, cooking, sloyd, etc."

In this same article upon school gardens Miss Withington

furthermore adds: "Boston gardens have, I think, made two distinct contributions to the movement. They have indicated their importance in directing the mind of the city child toward the pleasures and possibilities of country living, and they have established themselves as an integral part of school work, with the opportunity to become increasingly valuable as our ideals come to include an educational alliance between the head and the hand."

Then came a perception of the use of vacant lots. Situated in the heart of a tenement district, the DeWitt Clinton Park of New York City furnishes so fine an example of the school-farm idea that it may be helpful to give some of the details in regard to it. The farm garden for 1903 was a plot 100 feet by 200 feet, divided into areas to accommodate 277 children. A flower bed was maintained in the center, and other beds of flowers for cutting were grown at appropriate points. All of the flowers were thrifty and were grown successfully. The borders were planted with clover, rye, wheat, oats, and buckwheat. The season extended from July 19 to November 1, and the number of children participating was 141 boys and 145 girls. A small building was designated as the farmhouse, and in it young girls were taught household duties, a boy being assigned to the heavier chores. No less than 250 girls assisted in this work. The house was equipped with a stove, cooking utensils, dishes, table linen, and all that was necessary to teach the performance of housework in a neat and economical manner. Each child had an individual garden plot in which seven varieties of vegetables were planted; corn in the center, on either side of this string and butter beans, peas, radishes, turnips, lettuce, and a border of buckwheat around the whole farm. The child's coöperation in preparing the ground was found to be a necessary initiative step, as his hands were not accustomed to handle anything so small and tender as a seed. The promoters of the movement were amazed to find how helpless the children were when it came to doing any work requiring thought and steady hands. A more suggestive tract on the improvement of vacant lots can hardly be found than the one coming from the New York Park Board, entitled "Report of the first children's school farm as originated and conducted by Mrs. Henry Parsons."

In the West, the school farm as an ideal for secondary schools is being exploited in teachers' meetings and community mass meetings. The idea is so cordially received that no one can doubt its future economic results in directing the attention of young people to the pleasures of country life. An interesting leaflet has recently been issued by the Educational Department of the State of Maine. It is entitled "Standard Schools," and embodies something of this idea in a plan set forth for the improvement of the rural common school. It is supposed that the school will cost more money than a small community can readily raise. Therefore, it is proposed that a community will be selected for the establishment of the school which furnishes the largest special fund, based on the valuation of its real and personal property for taxation. Secondly, the town where the improvement is to be made must provide the school building and a lot of at least three acres in extent. Then a donor or donors must be secured to duplicate the special fund, which is not to exceed $1000.

In other words, it is proposed to secure a small endowment for the school, to be used in the improvement of the building and grounds. The leaflet indicates the kind of building required, and describes the out-of-door surroundings as follows: "A school lot of at least three acres. This area should be divided into plots for forest trees, fruit trees, vegetable and flower gardens, a lawn, playgrounds and necessary drives, walks and paths." The things which such a school may be expected to accomplish are enumerated in an attractive way. The pamphlet has only a dozen printed pages and can be obtained free by writing to Mr. W. W. Stetson, State superintendent of public schools, Augusta, Me.

I have described the plan at length, for it suggests a way for the Massachusetts Horticultural Society to do active, constructive work. Would it not be possible to find a community in Massachusetts ready to raise a "special fund," to be duplicated by this society, to use in the equipment and maintenance of a farm school? The most potent factor in its success or failure would be the personality of the teacher. It would be well to establish one school as a model, and then to maintain the teacher at a fixed salary per year, to go elsewhere to do the same work. He should be a

teacher, not a lecturer, and should remain long enough in a community to establish the school upon a firm basis. Denmark maintains fifteen of these itinerant teachers, who go from place to place, establishing departments of domestic science. If this society were interested to take the initiative in a movement to equip and maintain one of these schools with one itinerant teacher, it might lead to far-reaching results.

It would be well if the Massachusetts Forestry Association and the Federation of Women's Clubs could be induced to coöperate with the Massachusetts Horticultural Society, not alone for the purpose of sharing the expense, but because these other organizations would prove helpful in disseminating the nature idea. We have only to notice the work they have accomplished in the protection of the trees to see their usefulness and power in the betterment of community life. The devastating gypsy and brown-tail moths have met adversaries bent upon deadly destruction.

Up to this point we have emphasized the economic and socialistic aspects of the question, but the return to nature is destined to serve a far higher and nobler end, namely, to quicken the spiritual life of man. People are beginning to realize that if we would save the poor from his poverty, the weak from his weakness, the public conscience must be aroused to understand what wise men have always known, that "to watch the corn grow and the blossoms set; to draw deep breaths over ploughshare or spade; to read, to think, to love, to hope, to pray—these are the things that make men happy."

GENERAL DISCUSSION ON VEGETABLES.

OPENED BY WARREN W. RAWSON, ARLINGTON, MASS.

Saturday, March 18, 1905.

In place of the usual Saturday lecture a general discussion of the subject of vegetable culture was held at Horticultural Hall today. The meeting was opened by Hon. Warren W. Rawson, the chairman of the Committee on Vegetables, who spoke in part as follows:

The growing of vegetables has become one of the principal occupations in the vicinity of Boston and other large cities, and many who make a specialty of it are doing quite a large business in that direction. In many ways it is like other kinds of business; it requires large experience and capital and depends more on the man than anything else. In this locality there is probably more done in this line than in any other part of the country. The market is educated up to a high standard and requires the best quality put up in the best manner, and when this is attained good prices are received. The growing in the South affects us very much in regard to the prices obtained for our goods, but their products are not of the best. Their are times when the market is bare and a good price is obtained by those who have the goods on hand. It is a serious question with the vegetable grower today what to grow and when to have it in the market. It used to be the case that our early vegetables in the market brought the best price, but it is not so today; it is the quantity in the market that governs the price.

The seasons and climate have changed very much the past twenty-five years, and for that reason many of our most delicate vegetables have to be grown under glass; therefore, many greenhouses have been erected, and today, by a careful estimate, there

are nearly 200 acres covered with glass in the state of Massachusetts. The product is not all sold here, but shipped to New York, Philadelphia, Buffalo, and Chicago. There are times when prices are very low, but most of the year they will average well.

The vegetable grower of today would be incomplete in his equipment without a number of greenhouses, that is, enough so that he can run each crop at the proper temperature required. I have never known a vegetable grower who built any houses that did not continue to build and to wish that he had built more when he commenced, and today I am sure that the annual sales of vegetables in the Boston market amount to more than do the sales of fruits, plants, and flowers combined that are raised in Massachusetts.

There is no place in this country or any other where the growing of vegetables has attained the perfection that it has here, and where the products per acre are equal to that of the vicinity of Boston. We have the best market and the best goods and obtain the highest prices obtained in any market. I think the vegetable grower of Massachusetts should be satisfied with his lot; if not with the profit he makes, with the quality he produces. This success has been attained by careful study and application, thorough cultivation, and good judgment.

I will not speak of any special kind of vegetable grown, but will leave the subject open for discussion. We have found that better crops can be grown inside than out, because inside the crop is entirely under your control, while outside it is not and sometimes entirely out of your control, on account of the great changes in temperature and climate. Under glass you can sow, plant, cultivate the soil, transplant and gather the crop at any time and, by him who understands the business, better crops can be grown in shorter time and often at less expense under glass than in the field.

The vegetables shown at our exhibitions are of the finest quality and speak for themselves of the care and cultivation necessary to produce them, and we hope in the near future to double our exhibitions in size and improve in quality. It is by comparison we learn who has the best product, and by comparison we learn many things and get new ideas and new inspiration

to go home and try and do better next time, no matter if you had the best shown at the last exhibition.

In growing any crop the principal requirements to produce it are air, heat, light, and moisture; the greatest is moisture. Over 70 per cent of moisture is contained in every crop grown. The necessary air in greenhouses is acquired by ventilation. The light is obtained through the glass, or, if the nights are long as they are in winter, the amount of light is increased by the use of arc electric lights over the houses. The temperature is maintained by heated pipes placed in the house at regular distances, and the regulation of heat is attended to through the boiler situated at the lower end of the house. One 60 horse power boiler will heat a house covering one-half an acre of land to a temperature required for lettuce through the winter, and will run the house for cucumbers after March 1st.

There are over seventeen hundred market gardeners who bring vegetables to the Boston market and over twenty-five hundred in the state; and the number is growing larger every year. None of them get rich, but with hard work and economy obtain a good living and have their usual dinner at Thanksgiving, no matter what the price of turkey may be.

The time was when almost any crop of vegetables would pay for growing, but today it is a problem what to grow; and the man must study the market, know how to produce a good crop by the closest attention to details, and confine himself to a few kinds with which he is most familiar and which are best adapted to his soil and market. With the great improvement in machinery and the application of special fertilizers adapted to the requirements of each crop, with the use of greenhouses and the aid of electric light, with the use of various kinds of appliances for the fumigation of crops and of sterilization for the purification of the soil, there is no reason why the market gardener of today cannot grow a perfect crop and of such quality that it will demand a good price at any time it is placed upon the market.

In response to a question as to the value and efficacy of electric light in promoting the growth of vegetables, Mr. Rawson stated

that he had made use of it for seven or eight years and had found that it improved the quality and increased the production of vegetables grown under glass. He used it mostly on days in which there was a lack of sunshine and in the winter season when the nights were long. He estimated that it increased the growth fifteen per cent and appeared to be of greater benefit to a crop of cucumbers than to lettuce.

Benjamin P. Ware, in referring to Mr. Rawson's assertion that the climatic conditions of eastern Massachusetts had changed during the last half century, asked what evidence he had for such a belief.

Mr. Rawson replied that it is evidence enough when you cannot grow now a crop of cucumbers and melons out of doors. The sudden changes of temperature to which we are liable make it impossible to do it.

Varnum Frost ridiculed the idea of growing vegetables by electricity which he said was against common sense, and was only a "fad" similar to the idea formerly in vogue of painting the glass of a greenhouse red.

He said that success in vegetable growing depended entirely on the condition of the soil. The trouble with many crops today is that the soil is sick with fertilizers. What is needed is virgin soil. You cannot grow a crop of potatoes on old cultivated ground, but plow up a piece of grass land and you will get a good crop.

Samuel H. Warren remarked that Mr. Frost had touched just the right point and gave an instance of the results from plowing up an old huckleberry field that had never been cultivated. Go back to the country he said and take wild land and subdue it and good crops can be got as there were years ago. No fertilizer is so good as virgin soil.

Joshua C. Stone remarked that no one now has virgin soil. What we want to know is, how to make the best of what we have.

John Ward spoke on the subject of changes in the seasons. Changes do occur, but just as great changes took place fifty years ago as now.

George M. Whitaker stated that the Weather Bureau had

compiled the statistics of a great many seasons, and the tabulated results showed a practical uniformity of weather in the different seasons of New England.

Edward B. Wilder asked what were now considered the best varieties of tomatoes.

Mr. Rawson replied that in Worcester County the Beauty was preferred. For the Boston market the Stone was grown as much as any. The Acme was not much grown now.

In answer to a question as to the best fertilizer for asparagus, Mr. Rawson stated that bone and potash were the best; 1200 pounds to the acre.

In answer to some of the criticisms which had been made on his methods, he replied that in his work it was his practice to look forward and not back, and what he recommended was the result of his experiments and experience. If others did not approve them they were at liberty to use their own methods.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1905

PART II

BOSTON
PUBLISHED BY THE SOCIETY
NINETEEN HUNDRED AND SIX

CONTENTS

Annual Reports for the Year 1905

Report of the Board of Trustees 113

Report of the Committee on Prizes and Exhibitions . 127

Report of the Committee on Plants and Flowers . 129

Report of the Committee on Fruits . . . 165

Report of the Committee on Vegetables . . . 183

Report of the Committee on Gardens . . . 195

Report of the Committee on School Gardens and Native Plants 201

Report of the Delegate to the State Board of Agriculture 239

Report of the Inspector to the State Board of Agriculture 243

Report of the Committee on Lectures and Publication 245

Report of the Secretary and Librarian . . . 247

Report of the Treasurer 251

The Annual Meeting, November 18, 1905 . . . 261

Necrology, 1905 265

Officers, Committees, and Members, 1905 . . . 277

ANNUAL REPORTS FOR THE YEAR 1905.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

1905. PART II.

REPORT OF THE BOARD OF TRUSTEES FOR THE YEAR 1905.

The Board of Trustees of the Massachusetts Horticultural Society presents herewith a summary of the business transacted during the year 1905.

Nine meetings have been held with an average attendance of nine members.

January 7. An appropriation of $400.00, in addition to the income of the French and Farlow Funds, was voted for the library, and an appropriation of $200.00, to include the income of the John Lewis Russell Fund, was voted to the Committee on Lectures and Publication.

The report of the Committee on Prizes and Exhibitions, to which was referred, at the last meeting, the subject of an increase in the compensation of members of the exhibition committees, was presented by Mr. Craig. The committee recommended that the compensation of members of the Committees on Plants and Flowers, Fruits, and Vegetables (chairmen excepted) be fixed as follows:

For the Spring Exhibition, the Rose and Strawberry Exhibition, the September Exhibition, and the Chrysanthemum Exhibition, five dollars for the first day; other days, two dollars a day. For all

other exhibitions at which prizes are offered, two dollars a day. For other days on which exhibits are made, one dollar a day. These amounts to be paid only to members attending the exhibitions.

The recommendations of the committee were adopted.

An appropriation of $250.00 was voted to the Committee on Prizes and Exhibitions for the arrangement of exhibitions during the current year.

On motion of Mr. Spooner it was voted that the Committee on Gardens be requested to consider the expediency of holding, in the City of Boston, another field demonstration of the subject of insect pests. It was voted also, on motion of Mr. Spooner, that the same committee be requested to consider the matter of offering prizes for the renewal of neglected orchards and to report at some future meeting of the Board.

The following named candidates, having become eligible in accordance with the requirement of the By-laws, were elected to membership in the Society:

George E. Barnard of Ipswich, proposed by A. F. Estabrook,
Henry E. Cobb of Newton, proposed by A. F. Estabrook,
J. Livingston Grandin of Boston, proposed by A. F. Estabrook,
Frederick L. Jack of Boston, proposed by A. F. Estabrook,
J. Morris Meredith of Topsfield, proposed by A. F. Estabrook,
Charles E. Stratton of Boston, proposed by A. F. Estabrook,
E. Everett Holbrook of Holbrook, proposed by A. F. Estabrook,
Frank B. Bemis of Beverly, proposed by A. F. Estabrook,
Thomas D. Blake of Brookline, proposed by A. F. Estabrook,
C. Herbert Watson of Brookline, proposed by A. F. Estabrook,
Walter I. Badger of Cambridge, proposed by A. F. Estabrook,
William Brewster of Concord, proposed by A. F. Estabrook,
Frank E. Peabody of Boston, proposed by A. F. Estabrook,
Edwin S. Webster of Chestnut Hill, proposed by A. F. Estabrook,
Frank G. Webster of Boston, proposed by A. F. Estabrook,
George H. Leonard of Boston, proposed by A. F. Estabrook,
Frank W. Remick of Boston, proposed by A. F. Estabrook,
Laurance J. Webster of Holderness, N. H. proposed by A. F. Estabrook,
Robert Winsor of Weston, proposed by A. F. Estabrook,

Stedman Buttrick of Concord, proposed by A. F. Estabrook,
Samuel Carr of Boston, proposed by A. F. Estabrook,
Arthur S. Johnson of Boston, proposed by A. F. Estabrook,
Wallace L. Pierce of Boston, proposed by A. F. Estabrook,
Mrs. Ida F. Estabrook of Boston, proposed by A. F. Estabrook,
Wm. Allan Riggs of Jamaica Plain, proposed by J. K. M. L. Farquhar.

February 4. The following vote was adopted:

The Massachusetts Horticultural Society hereby authorizes Arthur Dehon Hill to act on its behalf as legislative counsel at the present session of the Legislature of Massachusetts in all matters pertaining to a certain bill entitled "An Act Relative to the Choosing of the Treasurer and Secretary of the Massachusetts Horticultural Society."

Mr. Hunnewell stated that complaint had been made that the library room was insufficiently heated and presented suggestions from the heating contractors concerning a remedy. It was voted to refer the matter to a committee of three to investigate and report at the next meeting of the Board. The Chairman appointed as the committee Messrs. Farquhar, Pettigrew, and Spooner, and it was voted to add Mr. Hunnewell to the number.

It was voted also that the same committee be requested to investigate the cost of the electric lighting of the building.

The following named candidates were elected to membership in the Society:

William J. Hoyt of Manchester, N. H., proposed by A. F. Estabrook,
Frank A. Day of Newton, proposed by A. F. Estabrook,
Henry B. Day of West Newton, proposed by A. F. Estabrook,
Thomas P. Beal of Boston, proposed by A. F. Estabrook,
Miss Susan White Hardy of Boston, proposed by A. F. Estabrook,
James J. Storrow of Boston, proposed by A. F. Estabrook,
Gardiner M. Lane of Boston, proposed by A. F. Estabrook,
Mrs. Susan E. French of North Easton, proposed by A. F. Estabrook,
David Loring of Boston, proposed by A. F. Estabrook,
James Stuart of Brookline, proposed by James Wheeler.

April 1. Mr. Hunnewell reported for the committee on heating the library room that the matter had been satisfactorily arranged by means of a damper in the hot-air duct and a pair of swinging doors at the entrance to the room. It was voted to confirm the action of this committee and to appropriate the sums of $55.00 for the work on the hot-air duct and $38.00 for the swinging doors.

A communication was received through the architects, Wheelwright & Haven, concerning the condition of the skylights of the exhibition hall, and it was voted to authorize the Finance Committee to take such action in the matter as may be advisable.

A communication from the President of the National Horticultural Society of France was presented inviting the Massachusetts Horticultural Society to be represented by one or more delegates at the approaching International Horticultural Congress at Paris. It was voted to appoint our Corresponding Member, M. Edouard André, as delegate to represent the Society on that occasion.

On motion of Prof. Sargent it was voted to recommend for corresponding membership in the Society, Messieurs Maurice L. de Vilmorin, Philippe L. de Vilmorin, and James Herbert Veitch.

Arthur D. Hill reported a draft of proposed amendments to the By-laws as follows:

Section I to be amended by striking out in the third line of the first paragraph the words "a Treasurer, a Secretary," so that said paragraph shall read as follows:—

The Annual Meeting of the Society for the transaction of business and for the election of officers, namely, a President, two Vice Presidents, a Delegate to the State Board of Agriculture, a Board of Trustees, and a Nominating Committee, shall be held on the second Saturday after the first Monday in November, and the officers elected shall enter upon their duties on the first day of January ensuing.

Section VI to be amended by striking out in the first line of the first paragraph the words " elected annually by the Society" and inserting in place thereof the words:— appointed annually by the Board of Trustees for a term of one year beginning on the first day of January ensuing,—so that said paragraph shall read as follows:

The Treasurer shall be appointed annually by the Board of Trustees for a term of one year beginning on the first day of January ensuing, and shall have the following powers and duties: —

SECTION VII to be amended by striking out at the end of the first sentence the words "elected annually by the Society" and inserting in place thereof the words:— appointed annually by the Board of Trustees for a term of one year beginning on the first day of January ensuing, so that said sentence shall read as follows:

The Secretary shall be appointed annually by the Board of Trustees for a term of one year beginning on the first day of January ensuing.

SECTION IX to be amended by inserting in the first line of the first sentence of clause (6), after the word "appoint," the words:— the Treasurer and Secretary of the Society,—also by striking out in the fourth line of said sentence the word "either" and inserting in place thereof the word:— any,— so that said sentence shall read as follows:

They shall appoint the Treasurer and Secretary of the Society, a Superintendent of the Building, and a Librarian of the Society, and define their duties, except when these are determined by the By-Laws, and may remove them or any of them, and appoint others in their stead, whenever, in their opinion, the interests of the Society shall require it.

SECTION XIV to be amended by inserting at the end of the first sentence of clause (1) the following new sentence:

Said committee shall nominate candidates for all offices which are to be filled by election by the members of the Society.

SECTION XIV to be further amended by inserting in the first line of the first sentence of clause (2), after the word "office," the words:— which is to be filled by election by the members of the Society,— so that said sentence shall read as follows:

Nominations for any office which is to be filled by election by the members of the Society, in addition to those made by the Nominating Committee, may be made by papers signed by fifteen or more members of the Society, and deposited with the Secretary at least two weeks before the Annual Meeting.

The report of Mr. Hill was accepted and it was voted to recommend to the Society at the next annual meeting the adoption of the proposed amendments.

The following named persons were elected to membership in the Society:

Miss Rose Hollingsworth of Boston, proposed by Robert T. Jackson,
Frank R. Pierson of Tarrytown-on-Hudson, N. Y., proposed by Wm. N. Craig,
Miss Eliza D. Boardman of Boston, proposed by Miss Cora H. Clarke,
Thomas William Head of Groton, Conn., proposed by Wm. P. Rich,
Mrs. Etta Fish Tingley of Greenwood, proposed by Wm. P. Rich,
Mrs. Sallie R. Allen of Medford, proposed by Mrs. E. M. Gill.

May 27. The following memorial notice of the late Warren Fenno, a member of the Board, was read by the Secretary:

It is with feelings of deep regret that the Board of Trustees of the Massachusetts Horticultural Society records the death, on April 27, of its associate member, Warren Fenno of Revere.

For a period of twenty-eight years he has been an active member of this Society, and for twenty-five years has served on the Committee on Fruits, the present year as its chairman.

His critical knowledge freely and faithfully devoted to this important department of the Society's work has been of the greatest value, and he had come to be regarded as a leading authority in the judging and nomenclature of fruits.

His many estimable qualities of character also had won the respect and kindly regard of all who knew him.

It is voted, therefore, to express to the members of his family our sincere sympathy in the loss they have sustained by his death, and to convey to them the assurance of the esteem in which he was held by his associate members of the Board, and their appreciative recognition of his long and valuable service in the interests of this Society.

The memorial was adopted and a copy ordered to be sent to the family of the deceased.

The President declared a vacancy in the office of Trustee occurring through the death of Mr. Fenno, and called for nominations to fill the same in accordance with the provisions of the By-laws.

Dr. Henry P. Walcott of Cambridge was nominated for Trustee by Mr. Spooner and was elected by a unanimous vote.

Nominations were also called for to fill the vacancy existing in the Committee on Fruits.

Warren H. Heustis of Belmont was nominated by Mr. Spooner, and Wilfrid Wheeler of Concord by Mr. Farquhar. The ballot resulted in the choice of Wilfrid Wheeler who was declared elected chairman of the Committee on Fruits.

A communication was read from John P. R. Sherman, Esq., Executor, conveying to the Society $1000.00, being in full for the legacy payable under the Will of the late John C. Chaffin of Newton.

The conditions of the Will under which the legacy is paid are as follows:

"I give to the Massachusetts Horticultural Society one thousand dollars, the income thereof to be given annually by said Society as a special prize for Hardy Perpetual Roses of unusual merit, according to the impartial judgment and discretion of the prize committee of said Society, but if in any year the exhibit shall not be, in the opinion of the committee, of sufficient merit to deserve the prize, the income for that year, or a portion of it, may be added to the prizes of subsequent years."

It was voted to accept the bequest of Mr. Chaffin and to refer it to the Committee on Prizes and Exhibitions.

On motion of Mr. Craig it was voted to extend an invitation to the American Rose Society to hold its annual meeting and exhibition in connection with the spring exhibition of the Massachusetts Horticultural Society in March, 1906.

The following named persons were elected to membership in the Society:

Clarence A. Backer of Melrose, proposed by Wm. P. Rich,
William Whitman of Brookline, proposed by Wm. P. Rich,
Mrs. Charles P. Greenough of Brookline, proposed by B. Preston Clark,
Miss Margaret White of Cambridge, proposed by Robert T. Jackson,
Sabin Bolton of North Easton, proposed by Oakes Ames,
George Percy Williams of Medfield, proposed by Miss Caroline L. W. French.

September 9. The following proposed amendments to the By-laws were adopted and referred to the Society for action at the annual meeting in November:

SECTION IX, sub-section 4, on page 12, to be amended by striking out the first sentence thereof and inserting the following:

(4) They shall consider and pass upon all questions of the appropriation of money, including the amounts to be appropriated for prizes and gratuities, and shall, at the annual meeting, report to the Society the amounts they have appropriated for prizes and gratuities during the ensuing year, and also such other appropriations as they think meet for the ensuing year.

SECTION II to be amended by striking out the period at the end thereof and inserting the following:

; provided, however, that the Trustees may appropriate a sum or sums not exceeding seven thousand five hundred dollars in any one year for the purpose of prizes and gratuities.

It was voted to authorize the Committee on Prizes and Exhibitions to publish a preliminary schedule of the Spring Exhibition of March, 1906. On motion of Mr. Spooner it was voted to recommend to the Society at its annual meeting an appropriation of $6700.00 for prizes and gratuities for the year 1906; the division of this amount among the several committees to be made by the Committee on Prizes and Exhibitions.

Mr. Fewkes presented the following motion:

Moved.— That two or more delegates be sent each year to, at least two of the principal exhibitions held in the United States, and one or more delegates be sent once in three years to European exhibitions, and that these delegates shall make a report of such matters as in their opinion will be of interest and value to this Society. And also that these delegates be appointed each year by the Committee on Exhibitions, subject to approval by the Board of Trustees.

It was voted to refer the matter to the Finance Committee.

On motion of Mr. Fewkes it was voted to extend an invitation to the American Peony Society to hold its next annual exhibition in connection with the Peony Exhibition of the Massachusetts Horticultural Society in June, 1906.

Miss E. Gertrude Woodberry, proposed by A. F. Estabrook, was duly elected a member of the Society.

October 7. A recommendation from the Committee on Prizes and Exhibitions was received favoring an additional appropriation of $300.00 for the Committee on Vegetables for the year 1906. On motion of Prof. Sargent it was voted to refer the matter to the Finance Committee with power.

A communication from Miss Caroline L. W. French was read inclosing a check for $50.00 to be expended for books for the library. It was voted to accept the gift with thanks and to refer it to the Committee on the Library.

It was voted to authorize Mr. Spooner to invite the State Board of Agriculture to hold its winter meeting for 1906 in the halls of this Society.

It was voted also, on motion of Prof. Sargent, to appoint a committee of two to present at a future meeting of the Board a revised schedule of prizes and exhibitions for the year 1907. The chairman appointed as that committee Messrs. Sargent and Farquhar.

On motion of Mr. Manning an additional appropriation of $50.00 was voted for the Committee on Lectures and Publication for the year 1906.

The following named persons were elected to membership in the Society:

Henry W. Dodd of Boston, proposed by A. F. Estabrook,
The Honorable Mrs. G. Duncan of Boston, proposed by Wm. P. Rich.

November 21. A communication from the Society L'Avenir-Horticole was read constituting the Massachusetts Horticultural Society "Société Correspondante." It was voted to accept the communication with expression of thanks for the honor conveyed.

A communication from Henry S. Adams, chairman of the Committee on School Gardens and Native Plants, was presented recommending several changes in that committee. It was voted to change

the name of the Committee on School Gardens and Native Plants to the Committee on Children's Gardens and to discontinue further exhibitions of children's herbariums and native plants. An appropriation of $150.00 was voted for the Committee on Children's Gardens for the year 1906.

Prof. Sargent, chairman of the committee on the revision of the Schedule of Prizes and Exhibitions for the year 1907, presented the following report:

Your committee asked at a recent meeting to prepare a scheme for a schedule of prizes to be awarded during the year 1907 finds,—

That the number of exhibitions at which an admission is charged can be advantageously reduced by giving one year an exhibition of early spring flowers, like bulbs etc., in March, and the next year, in place of this exhibition, an exhibition about the first week in June for azaleas, rhododendrons, and other plants in perfection at that season, and that the second large exhibition of the year be given in November for chrysanthemums.

That these two important exhibitions of the year should be supplemented by four, one-day, free exhibitions in May, June, and September, the first for narcissi, the second for peonies, the third for roses and strawberries, and the fourth for dahlias.

That all money prizes given at weekly exhibitions during the spring and summer months should be discontinued, and that in place of these exhibitions the Committee on Exhibitions and Awards should meet on every second Saturday from the first of March to the first of November to judge any plants, flowers, fruits, or vegetables that may be brought to the Hall for the recognition or endorsement of the committee, and that the committee should be authorized to expend a certain sum for medals and other forms of endorsement for such exhibits.

That prizes for wild flowers and for children's herbaria should be discontinued as such prizes in no way encourage horticulture; the collection and display of wild flowers being the sphere of a botanical and not of a horticultural society.

That the Committee of Awards should have the right to employ experts as judges, and that nurserymen or florists making exhibits should have the right, under the control of the Committee of Arrangements, to display their trade catalogues in connection with their exhibits.

That horticulture can be made more popular in the state by offering prizes for the gardens of amateurs, that is, persons who do not employ a gardener and do not employ a laborer regularly, and for bunches of the flowers of perennial and annual plants grown by such amateurs and exhibited before the Society; and that a taste for flowers can be further increased

by prizes for plants grown in window boxes and exhibited before the Society at the end of the summer.

The committee believes that this movement of making horticulture more popular can be further extended by offering small prizes for amateurs through some of the local horticultural societies in different parts of the state, and in this way extend its influence beyond the metropolitan district.

That the best interests of the Society can be obtained by reducing the number of money prizes and increasing the number of medals and certificates, as appears to be the universal custom in European societies.

That in order that exhibitors may have time to prepare their exhibits schedules should be published from twelve to fifteen months before the year in which the prizes are to be awarded.

That prizes might well be offered for essays on practical horticultural subjects, those essays receiving the highest awards to be printed from time to time in the proceedings of the Society.

At the conclusion of his report Prof. Sargent offered the following motion:

Voted, that it is the opinion of the Trustees that the best interests of horticulture in Massachusetts will be served if the Society offers prizes to be given at its exhibitions that will give to these the greatest possible variety and interest; that will encourage the production and cultivation of new plants, fruits, and vegetables; that will call attention to neglected but desirable flowers, fruits, and vegetables; that will develop a taste for flowers among persons who can cultivate their gardens only by their own labor and without the aid of paid gardeners, and that to produce these results the experiment should be tried of increasing the number of medals, plate, and certificates of merit offered by the Society, of increasing the amount of money prizes when money is offered, and of diminishing the number of small money prizes which, while they may have the effect of filling the Hall with exhibits, do little to promote horticulture.

After some discussion of the matter the motion of Prof. Sargent was adopted.

On motion of Mr. Hill the report of the committee on the revision of the schedule of prizes and exhibitions was accepted and the accompanying detailed list of prizes and exhibitions was referred to the Committee on Prizes and Exhibitions for its action and report.

On motion of Prof. Sargent it was voted that the sum of $5500.00 be appropriated for prizes and gratuities to be awarded during the year 1907.

It was voted also, on motion of Prof. Sargent, that the Committee on Prizes and Exhibitions be requested to report to the Trustees at an early meeting a scheme for the endorsement of new plants, fruits, and vegetables exhibited before this Society.

The following named persons were elected to membership in the Society:

Mrs. Moses Williams of Brookline, proposed by James H. Bowditch,
Charles H. Slade of Belmont, proposed by W. W. Rawson,
Maurice Fuld of Boston, proposed by W. W. Rawson,
Thomas L. Creeley of Belmont, proposed by W. W. Rawson,
John Clark of Watertown, proposed by W. W. Rawson,
Edgar Crosby of Arlington, proposed by W. W. Rawson.

December 2. The following recommendation from the Committee on Prizes and Exhibitions was adopted:

That medals and certificates be delivered immediately after being awarded and that a certain number of medals be kept on hand ready for distribution. That money prizes be paid by check within ten days after the first day of January next succeeding the date of award.

The Committee on Prizes and Exhibitions, to which was referred at the last meeting the proposed schedule for 1907, submitted the following report through its chairman, Mr. Farquhar:

The Committee on Prizes and Exhibitions approves the general plan of the schedule for 1907 but recommends that more encouragement be given to small exhibitors. The committee asks for further time in which to consider the arrangement of details.

The report of the committee was accepted.

The committee on nominations reported a list of committees for the ensuing year as follows:

Finance.— Walter Hunnewell, Chairman, Arthur F. Estabrook, George F. Fabyan.

Library.— Charles S. Sargent, Chairman, T. Otis Fuller, Samuel Henshaw, Charles W. Jenks, John Lawrence, Henry P. Walcott.

Lectures and Publications.— J. Woodward Manning, Chairman, James H. Bowditch, John A. Pettigrew, Edward B. Wilder, E. W. Wood.

Prizes and Exhibitions.—John K. M. L. Farquhar, Chairman, William N. Craig, Arthur H. Fewkes, Warren W. Rawson, William H. Spooner, Wilfrid Wheeler.

Plants and Flowers,— Arthur H. Fewkes, Chairman, Robert Cameron, William N. Craig, William Nicholson, James Wheeler.

Fruits.— Wilfrid Wheeler, Chairman, Charles F. Curtis, J. Willard Hill.

Vegetables,— Warren W. Rawson, Chairman, William H. Derby, Warren H. Heustis.

Gardens.— Oakes Ames, Chairman, George Barker, William N. Craig, William H. Elliot, Arthur F. Estabrook (*ex officio*), Arthur H. Fewkes, Charles W. Parker, John A. Pettigrew, William P. Rich, Henry P. Walcott.

Children's Gardens.—Henry S. Adams, Chairman, Charles W. Jenks, Harry S. Rand, William E. C. Rich, William P. Rich.

The report of the committee on nominations was accepted and it was voted that the list presented constitute the committees of the Society for the year 1906.

December 9. The following motion of Prof. Sargent, specially referred to this meeting, was taken up for consideration:

Voted, that from the beginning of 1907 the committees on prizes and exhibitions, on plants and flowers, on fruits, and on vegetables, be discontinued, and that in place of these four committees, a committee to be known as the Committee on Exhibitions and Awards, to consist of five members, shall be appointed, and that the Secretary of the Society shall act as the secretary of this committee.

After some discussion of the subject it was voted, on motion of Dr. Walcott, that the motion be laid on the table.

The President called attention to the unsatisfactory condition of the two large storage rooms on the second floor of the Society's building and recommended some changes in the method of handling the exhibition glassware.

It was voted that the Secretary be authorized to attend to this matter and an appropriation of $300.00 was voted for such expenses as might be incurred.

J. Thomas Butterworth of South Framingham, proposed by William N. Craig, was elected a life member of the Society.

William P. Rich,
Secretary.

REPORT OF THE COMMITTEE ON PRIZES AND EXHIBITIONS FOR THE YEAR 1905.

By John K. M. L. Farquhar, Chairman.

During the year of 1905 the usual exhibitions have been held and they have all shown improvement over those of the preceding year. The growth of public interest in the exhibitions of the Society has been demonstrated by the increased number of paying visitors — an increase of 1141 over last year.

The committee is pleased to note, too, greater enthusiasm among exhibitors and their appreciation of the improved facilities provided by the Society for displaying exhibits. A sufficient supply of glass bottles and vases and better covering material for the tables have been the means of removing inconveniences formerly experienced.

The establishment of a system of entry cards requiring exhibitors to file entries three days previous to the opening of exhibitions has enabled the officers of the Society to allot spaces in advance. The arrangement of the exhibitions on account of these entries has been greatly facilitated and improved.

The committee was again fortunate in securing the services of Mr. Robert Cameron of Cambridge and Mr. James Wheeler of Brookline in laying out the exhibits. The able and tactful manner in which this work has been done has contributed greatly to the success of the exhibitions as well as to promote interest among exhibitors.

REPORT OF THE COMMITTEE ON PLANTS AND FLOWERS FOR THE YEAR 1905.

By Arthur H. Fewkes, Chairman.

The year 1905 has been an uneventful one in the exhibition of plants and flowers. Although the awards of all kinds for the year exceed those of the previous year by nearly one hundred, the actual number of exhibitors has decreased. In 1904 there were one hundred and forty-seven persons and firms who made exhibits at various times, while in 1905 there were one hundred and forty-three, four less than the previous year.

It must be admitted that the enthusiasm displayed some years ago has been steadily declining, this being particularly noticeable at the large exhibitions in the classes calling for displays of decorative plants. In this connection great credit should be given the Harvard Botanic Garden for the magnificent displays made at different times by Robert Cameron, the superintendent, not only for the excellence of the specimens shown but also for the interest manifested in the success of our exhibitions. In fact if we had not been favored with these displays several of our shows would have been failures, almost, through lack of competition.

The decline of interest has been, perhaps, most apparent in the displays of trained chrysanthemum plants; one by one the prominent growers have dropped out after reaching the goal of first prize, until those who still keep up the race are few indeed.

There seems to be a popular demand for plants grown in a more natural way, having in view the great artistic decorative capabilities of the plant, but it is seldom indeed that the grower develops the artistic sense to the same degree that he does the ability to grow his plants well, and it is extremely doubtful if satisfactory results will be attained in this direction unless some extraordinary means are adopted to secure them.

The chrysanthemum is unique in the position it holds and it practically has no rivals at the time it is at its best. The before

mentioned decline of interest in it, from the point of view of the public, is largely due to rebellion against a mistaken conception on the part of the grower of what goes to make up a beautiful plant. With this should be recognized the fact that the public is annually satiated by the almost overwhelming displays of chrysanthemum flowers of the finest quality seen on every hand in store windows and on street corners during the chrysanthemum season.

When some genius arises endowed with the necessary artistic skill for arrangement, coupled with the ability to grow the plants in a suitable manner for the purpose, and backed by ample means or sure prospect of very liberal prizes, then we shall have chrysanthemum shows which will be a revelation and stop the cry of monotony and sameness so often heard in connection with these shows.

Here is an opportunity for some individual or individuals, abundantly supplied with this world's goods, to come forward and offer, fully a year in advance, one or more prizes sufficiently large to make it an object for growers to seriously consider the artistic side of the matter and break away from the stereotyped character of these shows as seen today.

With restrictions sufficient to secure the object sought, it would make our chrysanthemum exhibitions educational as well as a paying proposition for the Society.

While there is a decrease of interest in the direction indicated there is an increase in others, notably the carnation, the peony, and the dahlia. Hardy roses barely hold their own although the introduction of the new Rambler class is doing much to keep up the interest. These with the Hybrid Teas and Rugosa hybrids should be given careful attention, for the most important improvements in the rose are being made in these classes.

The February show of carnations has become a very important one both to the grower and the public, for it is at this season that the finest exhibits can be made and at a time when the public is most interested in them.

At the March show the interest seems to be changing considerably and where a few years ago the Dutch bulbs formed the center of attraction, they are now secondary and have given place to such things as orchids, cyclamens, cinerarias, roses, and plants grown for Easter decorations.

The sweet pea has increased in popularity from year to year and has now reached a point where a special exhibition is necessary to do it justice.

The peony and dahlia, both old-time favorites, but for many years almost forgotten, have through their inherent beauty and worth forced themselves to the front, until our peony shows have eclipsed the rose shows and the dahlia has attained a new beauty which entitles it to the first place in our autumn exhibitions.

A wise course to follow, it seem to us, would be to exploit these flowers to their fullest extent. They are the flowers in which the general public is most interested and which are attracting a corresponding commercial interest. We would include the rose in this category, for although the interest in it seems not to be as pronounced as it was a few years ago, it is only dormant and needs but little to arouse it to its old-time life and energy.

The honorary or special awards for the year have been numerous, but very few of them have been medals and of these none were higher than a Silver Gilt.

The first award of this nature was made on January 21 to W. A. Manda for a natural hybrid Lycaste, apparently between *L. Skinneri* and *L. lasioglossa*. It was interesting from the fact of its natural origin and Honorable Mention was awarded it. He was also awarded Honorable Mention for *Dendrobium nobile alba*. The specimen was a collected plant and bore flowers of a creamy white color with crimson throat. He also showed a fine Cymbidium, *C. Tracyanum*, for which he was awarded a First Class Certificate of Merit.

A new hybrid orchid, Cattleya × Susanæ, shown by E. O. Orpet, was thought worthy of Honorable Mention. It is a cross between *C. Skinneri* and *C. Warneri*.

February 4 Mrs. J. Montgomery Sears was awarded Honorable Mention for a seedling Amaryllis, deep red in color, of fine form and large size.

On February 11 there were several interesting new seedling carnations shown, awards being made them as follows:

To S. J. Goddard a First Class Certificate of Merit for Helen Goddard which had previously been awarded Honorable Mention. This is a beautiful flower of a light cerise-pink color.

Wm. Palmer of Buffalo, N. Y., was given the same award for Red Lawson, a red sport from the Mrs. Thomas W. Lawson. The color is rather dull but the variety should prove a very useful one as it has all the other good qualities of its parents.

Guttman & Weber again showed their Victory and the flowers were so fine that they were given a Silver Medal for it.

The variety Winsor, raised by Peter Murray and previously awarded Honorable Mention, was again shown by the present owners, the F. R. Pierson Co., and awarded a First Class Certificate. It is a promising variety of a fine light pink color.

The Governor Guild, a new scarlet seedling of considerable promise, was shown by E. N. Pierce & Son, and awarded Honorable Mention.

The variety Mikado, shown by M. A. Patten, was awarded Honorable Mention. It is a large bold flower in the way of Prosperity but marked with a much deeper color and can be considered only in the fancy class.

R. Witterstaetter of Cincinnati, Ohio, exhibited two new seedling carnations, the Aristocrat and Afterglow. They arrived in fine condition and were of beautiful color, fine form, and large size. The former is a beautiful cerise-pink in color and the latter a shade between this and a red, a very pleasing and unusual color. They were both awarded First Class Certificates.

Besides the awards for new carnations, J. E. Rothwell was given Honorable Mention for Lælio-cattleya Adolphus, (*L. cinnabarina* × *C. Acklandiæ*) and a First Class Certificate for Lælia Mrs. M. Gratrix, (*L. cinnabarina* × *L. Digbyana*).

A Cultural Certificate was also awarded Wm. C. Rust for a remarkably well-grown specimen of *Dendrobium Ainsworthii*.

March 4 Walter P. Winsor was awarded a Silver Gilt Medal for a remarkable display of Dendrobiums. There were forty plants in the collection and included twenty-five species and varieties, mostly of the Nobile type, and from among them five were selected as varieties not before shown before the Society and worthy of recognition: *D. euryalus* and *D. Dominianum* were awarded Honorable Mention; *D. Ainsworthii roseum*, a very much improved form, D. × Venus, pure white with maroon throat and tips, and *D. nobile Murrhiniacum*, white, suffused soft pink with maroon blotch, were awarded First Class Certificates.

The F. L. Ames Estate was awarded a First Class Certificate for *Miltonia Bleuana virginalis*, and W. N. Craig a Cultural Certificate for well-grown plants of Phalænopsis.

The Spring Exhibition, March 25–26, was of unusual excellence; the exhibit of the American Rose Society, which held its annual meeting and exhibition in connection with it, contributing much to its success.

The display of forced Rambler roses in pots and tubs probably has never been equalled. There were about sixty plants, principally from M. H. Walsh of Woods Hole, and were nearly all seedlings of his own raising, including the varieties Juniata, Wedding Bells, La Fiamma, Debutante, Sweetheart, Gaiety, Lady Gay, Delight, Hiawatha, Minnehaha, and Babette.

The same exhibitor also made a fine display of forced Hybrid Perpetuals in pots in an attempt to revive the old-time interest in these roses. This collection included among many other kinds several plants of the beautiful new white hybrid perpetual rose Frau Karl Druschki and about twenty plants of his fine seedling Urania. Also an unnamed double white seedling which was awarded Honorable Mention.

Four new carnations were awarded Honorable Mention: Cardinal, exhibited by the Chicago Carnation Co., a fine cardinal-red color; John E. Haines, a promising scarlet variety exhibited by John E. Haines and grown by H. Weber & Son, Oakland Maryland; Fred Burki, a promising white variety exhibited by John Murchie; and Glendale, a white variegated variety, shown by W. J. & M. S. Vesey, Fort Wayne, Ind.

Special awards made for orchids were Honorable Mention to Lager & Hurrell for *Cypripedium glaucophyllum*, a new species from Borneo, with upper sepal green, edged with white, side petals mostly brown and white with hairy edges, and the lip mostly deep rose marked with white near the center; to Morton F. Plant a First Class Certificate for *Phalænopsis amabilis Rimestadtiana*, a beautiful pure white form with lip marked with yellow, and fully twice the size of any other white Phalænopsis; to Julius Roehrs Co., who exhibited a very fine specimen plant of *Cymbidium Lowianum* for which they were awarded a Cultural Certificate; and to E. O. Orpet a Silver Medal for a seedling Cattleya, C. × Olivia, the

result of a cross between *C. intermedia* and *C. trianæ*. It is a beautiful flower with pure white sepals and petals, bright crimson lip, and white throat.

Other exhibitors receiving special awards were F. R. Pierson Co., who received a First Class Certificate for the new rose, Mad. Norbert Levavasseur, the so-called Baby Rambler, a plant with flowers resembling very closely the old Crimson Rambler, but of a dwarf bushy form and of an exceedingly free-flowering habit.

Wm. Sim, Honorable Mention for new sweet pea, Earliest Sunbeam, a pale yellow variety mostly valuable for its earliness.

Julius Roehrs, Honorable Mention for *Ficus Cannonii*, a species belonging to the same class as *Ficus Parcelli* but with deep purple foliage.

Henry H. Barrows and Son, a First Class Certificate for *Nephrolepis Barrowsi*, a sport from the Pierson fern of much the same character as the Tarrytown fern, but somewhat less finely divided and apparently a better plant.

The Lucius H. Foster Estate, Honorable Mention for Nephrolepis Dorchester, a sport from the Anna Foster fern which bears the same relation to its parent as the Tarrytown fern does to the Pierson fern.

Bayard Thayer, Honorable Mention for a pan of *Phlox divaricata*, showing the beauty of this plant when forced; and to the Misses Eldridge, Norfolk, Conn., for some beautiful sprays of *Bougainvillæa spectabilis*.

April 15 J. E. Rothwell showed two new orchids, *Cattleya Guatemalensis* (*C. Skinneri* × *Epidendrum aurantiacum*) and *Phajus Marthæ*, (*P. Blumei* × *P. tuberculosus*). The former received a First Class Certificate and is a beautiful free-flowering orchid, retaining much of the color of the seed parent but strongly effected in form by the pollen parent. The latter received Honorable Mention and is a large flower in the characteristic brown and yellow shades of the genus, but was not in sufficiently good condition to form a correct opinion of its merits.

April 29 Robert Marshall, gardener to E. W. Converse, was awarded a Cultural Certificate for well-grown plants of *Amaryllis vittata*, and Thomas T. Watt a like award for a fine plant of *Saccolabium ampullaceum* with seven spikes of beautiful rosy purple blooms.

The new Zanzibar balsam, *Impatiens Holstii*, was shown by Robert Cameron from the Botanic Garden. It is a strong growing species with bright red flowers in the way of *I. Sultani*.

The Rhododendron Show, June 3, was a very successful one, there being several exhibits in most of the classes besides a large number of miscellaneous displays. Among these, as specially instructive and valuable, was the display of flowering trees and shrubs made by the Boston Park Department and arranged by Mr. J. W. Duncan.

Pyrethrums and hardy azaleas were shown in unusually good condition, and tree peonies in greater number than ever before.

The most remarkable of the miscellaneous displays was from Walter Hunnewell who exhibited a magnificent plant of a hybrid *Rhododendron*, var. *lucidum*, grown in a tub. It was in fine condition, fully ten feet in height, and nearly as broad. Mr. T. D. Hatfield, gardener for Mr. Hunnewell, was awarded a Silver Medal for superior cultivation.

A cultural award was also made to Wm. C. Rust, gardener for Dr. C. G. Weld, who received a First Class Certificate for superior cultivation of *Calceolaria rugosa*, Golden Gem. Two plants were shown each nearly three feet in diameter and a complete mass of bloom.

J. E. Rothwell was awarded Honorable Mention for *Cypripedium* × *Lamontianum*, (*C. Calypso* × *C. Rothschildianum*). A large flower but dull in color, the lip being dull crimson and green, the petals striped deep crimson. He was also awarded a First Class Certificate for *Læliocattleya Lycedas*, (*L. tenebrosa* × *C. Schroderæ*). The sepals and petals are brownish crimson, with deep purple crimson lip, and heavily veined throat.

E. O. Orpet was awarded a First Class Certificate for seedling orchid Pacavia (*Lælia tenebrosa* × *Lælia purpurata*). The flowers have brown-crimson sepals and petals, deep crimson lip, and heavily veined white throat.

On account of the lateness of the season the Peony Show, which was set for June 10, was postponed to June 17, and proved a very successful one with good competition in all the classes. The increasing interest in the peony is bringing to the front many beautiful new varieties as well as numerous old ones which though not less beautiful than the new have been too scarce to be generally grown.

Among the latter we would mention the two flowers which took first and second prize respectively for specimen bloom: Mme. Boulanger, a very large and full flower, glossy soft pink in color; and James Kelway, a very large loosely built flower of a beautiful blush white color. Both were shown by T. C. Thurlow of West Newbury. One of the newer Japanese singles, White Lady, was also shown by him and received a First Class Certificate.

Three new varieties, never before shown here, were exhibited by E. J. Shaylor of Wellesley Hills, viz: M. Martin Cahuzac, a large finely formed, very deep crimson flower, the deepest color known to this section, was awarded Honorable Mention; Germain Bigot, a large flower of a glossy flesh color, shaded salmon; and Mme. D. Treyeran, white, shaded flesh were both awarded First Class Certificates.

The regular annual summer Rose Show was held on June 24–25 and made a fine exhibition. Although this is nominally a rose show there are so many other kinds of flowers and plants shown that the name nearly loses its significance. However there were more roses shown than for several years past, and of better quality.

A few special awards were made, mostly for peonies which were shown quite extensively. J. W. Howard was awarded Honorable Mention for *Salvia Sclarea*, an old species with purple bracts, quite showy, but seldom seen in cultivation.

Geo. Hollis was awarded Honorable Mention for three promising seedling peonies, viz: Number 96, a very full double variety, blush white with satiny lustre, the petals mostly long. Number 60, deep carmine crimson, a large full flower of fine substance and strong stem. Number 95, a large full flower with long petals, deep blush in color, lighter in the center.

The exhibition of July 8, 9 proved a little early for sweet peas, but other seasonable flowers were in great abundance, particularly the exhibits of Delphiniums which made a magnificent show. The display of herbaceous plants from the Mt. Desert Nursery, Bar Harbor, Maine, was an interesting one and included many peony flowers which were just in their prime, showing the difference in season between the two latitudes. About Boston they were entirely gone while these were at their best. The display included a specimen of *Lilium Grayii* never before shown here. It has the habit of *L. Canadense* but is a deep red in color with black spots.

Honorable Mention was awarded to Jackson Dawson for a seedling rose, Daybreak; it is of the Rambler type, a beautiful blush pink in color, and of large size.

On July 22 Mrs. A. W. Blake showed a specimen plant of the new *Nicotiana Sanderæ*. Cut flowers of this were shown last year by the introducers and a First Class Certificate was awarded them, but it has not proved altogether satisfactory. The plant shown was well grown and was probably presented in as favorable condition as it will ever be shown.

Various opinions have been expressed on the value of this as a bedding plant, mostly adverse, but with some it has proved quite satisfactory planted in partial shade or where it was protected from the sun during the middle of the day. In such locations it makes a fine display, particularly after the weather begins to get somewhat cool in the fall.

August 5 Mr. Julius Heurlin from the Blue Hill Nursery showed two fine hybrid Tritonias or Montbretias as they are commonly called. The varieties were Geo. Davidson, bright yellow, shaded orange, with fine, large well-opened flowers, and Germanica, deep red with yellowish throat, also with large, well-open flowers. A First Class Certificate was awarded each.

The displays of herbaceous plants were very fine, and remarkably good dahlias were shown for so early in the season.

On August 19 there were good displays of phlox, dahlias, and gladioli. John Lewis Childs showed the new gladiolus, America, for which he received a First Class Certificate. It is a pleasing light lavender-pink in color, with violet-crimson blotch, and with a large close spike of bloom.

The exhibition on August 26 was an interesting one and included very fine displays of China asters, herbaceous plants, dahlias and phlox. A particularly interesting display of different species of Viburnum in fruit was made by Mr. Duncan of the Boston Park Department. It filled twenty-six large vases and included the following species: *V. opulus, V. venosum, V. dentatum, V. lantana, V. lentago, V. cassinoides, V. Sargentii, V. dilatatum,* and *V. pubescens.*

The Annual Exhibition, September 14, was a very successful one and there was more or less competition in nearly every class.

Hardy coniferous trees, a class in which there has been but little interest shown for several years, were well represented and added much to the exhibition.

Competition in the classes for stove and greenhouse plants was not very spirited and had it not been for Mr. Cameron's magnificent group from the Harvard Botanic Garden this class would have been very poorly represented. This without doubt was the finest group ever staged in our halls and Mr. Cameron was awarded a Silver Medal in recognition of the superior skill shown in its arrangement.

The increased popularity of the dahlia has made it of so much importance that in future it will be made the prominent feature of an exhibition which will practically replace the present fall exhibition and be held somewhat earlier so there will be less danger of injury from frosts.

Besides the silver medal before mentioned there were a number of special awards made, mostly for new dahlias. A. E. Johnson of Brockton made an extensive display of seedlings, all of which were of equal quality with existing varieties. Nine of these were selected as quite distinct and each awarded Honorable Mention. Gen. Miles, the only one bearing a name, is a Fancy of a light purple color streaked with crimson. No. 89, a finely quilled Show variety of a delicate white and mauve color. No. 6, a white Decorative variety. No. 10, a fine Show bloom, chrome yellow, shaded orange. No. 2, a Fancy with orange-yellow ground, streaked with crimson. No. 25 a finely quilled Show variety, maroon, tinged crimson. No. 27 a pure yellow Show bloom. No. 75, a Decorative variety with cherry pink petals, tipped with white, and No. 44 a fine sulphur yellow Cactus variety.

E. W. Green was also awarded Honorable Mention for a seedling single dahlia, named Mary Green, with broad rounded petals crimson at the base and tipped with white.

Other special awards made were a First Class Certificate to Henry A. Dreer for *Victoria Trickeri* a remarkable new variety which succeeds at a much lower temperature than the original species.

Honorable Mention was also awarded the same exhibitor for two Nymphæas, *N. Bissetii* and *N. dentata magnifica*; the former,

a very large deep pink flower, is believed to be a cross of *N. dentata* with *N. Sturtevantii* and is claimed to be a freer grower and bloomer, doing well in a lower temperature. The latter is a fine large white flower, best described as a white *Sturtevantii*. It is a cross between *N. O'Marana* and *N. dentata*.

Alpinia Sanderæ, shown by Julius Roehrs Co., and awarded an Honorable Mention, is a fine foliage plant with distinct white variegation.

A sport from *Sedum spectabile* was shown by Walter Hunnewell, and awarded Honorable Mention. It is a fine deep rose in color, much deeper and richer than the species.

On October 28 a cultural certificate was awarded Mrs. A. W. Blake for a finely grown specimen of *Zygopetalum Mackaii*. It had two bulbs, five spikes of bloom, and thirty-two flowers.

The Chrysanthemum Show, November 9, was fully a week too late and the entries of cut blooms were few in consequence; for with many growers their flowers had passed their best and were unfit to show.

The plants were well grown and in good condition, but there was a lack of interest in competition.

Carnations were remarkably well shown for so early in the season and several new varieties were exhibited; among these Honorable Mention was awarded for the variety Marion Peirce, from Peirce Farm, Topsfield, Mass. The color is a beautiful shade of rose-pink and it is similar in form to the variety Enchantress. The flowers shown showed a tendency towards weak neck, which will, if a constitutional fault, ruin an otherwise beautiful variety.

The same award was made to H. A. Jahn for his No. 111, a promising seedling which seems to combine the good qualities of Enchantress and Fair Maid both in color and habit.

Honorable Mention was awarded also as follows:

To G. B. Anderson for seedling No. 10, a very large and very full flower of a scarlet color but a little dull in shade.

To Backer & Co. for a pink sport from Enchantress of the same form as the latter but of a more rosy color, and for seedling No. 14, a light yellow self of much promise.

To H. A. Stevens Co. for a Daybreak colored sport from the Mrs. T. W. Lawson.

To Peter Fisher for seedling carnation No. 171, a deep salmon-pink color of fine form.

M. A. Patten again showed Pink Patten which had previously been awarded Honorable Mention, and as the variety seemed to be well fixed it was awarded a First Class Certificate.

Other special awards were a First Class Certificate to Julius Roehrs Co. for *Phoenix Rœbelenii*, a very graceful new palm; an Honorable Mention to Dr. H. P. Walcott for seedling Chrysanthemum No. 1, a fine flower of incurved form and very deep yellow in color.

A Silver Medal was awarded to R. & J. Farquhar & Co. for a display of ornamental evergreens in pots, including many of the most beautiful golden and variegated forms of Retinispora, Thuya, and Biota.

A Silver Medal was also awarded to R. Vincent Jr. & Son, White Marsh, Maryland, for a most comprehensive display of one hundred varieties of hardy Chrysanthemums, mostly of the Pompon class. It proved very interesting and attracted much attention.

December 9 Mr. Oakes Ames showed two new hybrid orchids, *Zygo-Colax Amesianus*, (*Zygopetalum brachypetalum* × *Colax jugosus*). This was introduced by Sander and is intermediate between the two parents; sepals and petals green, spotted and blotched brown, lip white, streaked violet-blue. It was awarded a First Class Certificate.

Cypripedium tonso-Charlesworthii; this is an original seedling and is the result of a cross between *C. tonsum* and *C. Charlesworthii*. It resembles the latter in dorsal sepal while the pouch and petals resemble the other ; the petals, however, are larger than in either parent. A Silver Medal was awarded Mr. Ames for this.

On the same day A. H. Fewkes was awarded a First Class Certificate for a variegated sport from *Stevia serrata compacta, Stevia serrata compacta variegata*. The variegation is very distinct giving it a pleasing effect when grown as a flowering plant as well as making it useful as a summer bedding plant. Its dwarf habit makes it more valuable than the old variegated Stevia which is a variety of the ordinary tall form.

We have awarded during the year in money prizes and gratuities		$3399.00
One Society's Silver Gilt Medal	$ 12.25	
Three Appleton " " "	36.75	
Six Society's Silver Medals	40.50	
One Cultural " "	6.75	
One Appleton " "	6.75	
One " Bronze Medal	3.75	
Estimated value of above	106.75	106.75
		$3505.75
Appropriation for Plants and Flowers for 1905		3731.00
Amount awarded		3505.75
Unexpended balance		225.25

We have also awarded

Twenty-nine First Class Certificates

Nine Cultural Certificates

Forty-eight Honorable Mentions

Seventeen Votes of Thanks

Besides the above we have awarded the following special prizes,

Henry A. Gane Memorial Fund	35.00
Gardeners' and Florists' Club of Boston	40.00
Mrs. Oliver Ames	50.00
Horticulture	10.00
Boston Coöperative Flower Market	38.00
" " Flower Growers' Association	49.00
	$222.00

PRIZES AND GRATUITIES AWARDED FOR PLANTS AND FLOWERS.

1905.

February 4.

Gratuities:—

Mrs. J. Montgomery Sears, *Gardenia florida*, $1.

February 11.

Primula Sinensis.— Six plants in not less than six-inch pots:
1st, Edward J. Mitton, $5; 2d, Geo. F. Fabyan, $3; 3d, Mrs. John L. Gardner, $2.

Primula Stellata.— Six plants in not less than six-inch pots:
1st, E. A. Clark, $5; 2d, Mrs. John L. Gardner, $3.

Primula Obconica Varieties.— Six plants in not less than six-inch pots:
1st, Geo. F. Fabyan, $6; 2d, Geo. F. Fabyan, $3; 3d, Mrs. John L. Gardner, $2.

Begonia Gloire de Lorraine.— Six pots or pans:
1st, Hon. M. T. Stevens, $10; 2d, E. A. Clark, $6.

Violets.— Best bunch, one hundred blooms, Double:
1st, Malcolm Orr, $3; 2d, L. E. Small, $2; 3d, Arthur F. Coolidge, $1.

Best bunch one hundred blooms, Single:
1st, Wm. Sim, $3; 2d, Joseph H. White, $2; 3d, Matthew B. Dallachie, $1.

Carnations.—Best vase, twenty-five blooms, White:
1st, Peter Fisher, $3; 2d, M. A. Patten, $2; 3d, H. A. Stevens Co., $1.

Best vase, twenty-five blooms, Scarlet:
1st, Backer & Co., $3; 2d, C. E. Dickerman, $2.

Best vase, twenty-five blooms, Light Pink:
1st, M. A. Patten, $3; 2d, S. J. Goddard, $2; 3d, H. A. Stevens Co., $1.

Best vase, twenty-five blooms, Dark Pink:
1st, Wm. Nicholson, $3; 2d, L. E. Small, $2; 3d, M. A. Patten, $1.

Best vase, twenty-five blooms, Crimson:
1st, Wm. Nicholson, $3; 2d, M. A. Patten, $2; 3d, Backer & Co., $1.

Best vase, twenty-five blooms, Variegated:
1st, Wm. Nicholson, $3; 2d, M. A. Patten, $2; 3d, Peter Fisher, $1.

Best vase, twenty-five blooms, Yellow:
1st, M. A. Patten, $3; 2d, Backer & Co., $2; 3d, Backer & Co., $1.

SPECIAL PRIZES OFFERED BY
THE BOSTON COÖPERATIVE FLOWER GROWERS' ASSOCIATION,
NO. 2 PARK ST.

CARNATIONS.— Best vase, fifty blooms, White:
1st, Peter Fisher, $4; 2d, M. A. Patten, $2.
Best vase, fifty blooms, Scarlet:
1st, Peter Fisher, $4.
Best vase, fifty blooms, Light Pink:
1st, Peter Fisher, $4; 2d, S. J. Reuter, $2.
Best vase, fifty blooms, Dark Pink:
1st, Peter Fisher, $4; 2d, S. J. Reuter, $2.
Best vase, fifty blooms, Crimson:
1st, Peter Fisher, $4; 2d, S. J. Reuter, $2.
Best vase, fifty blooms, Variegated:
1st, M. A. Patten, $4; 2d, Peter Fisher, $2.
Best vase, fifty blooms, Yellow:
1st, M. A. Patten, $4.
Best vase, not less than one hundred blooms and not less than six varieties:
1st, Wm. Nicholson, $8.

SPECIAL PRIZES OFFERED BY
THE BOSTON COÖPERATIVE FLOWER MARKET,
MUSIC HALL PLACE,

CARNATIONS.— Best fifty blooms, Fair Maid:
1st, H. A. Stevens Co., $4; 2d, A. Roper, $2.
Best fifty blooms of any White:
1st, C. E. Dickerman, $3; 2d, L. E. Small, $2.
Best seedling, not in commerce:
1st, M. A. Patten, $4; 2d, L. E. Small, $2.
VIOLETS.— Best hundred blooms, Princess of Wales:
1st, Harry F. Woods, $3; 2d, Wm. Sim, $1.
Best hundred blooms, Lady Hume Campbell:
1st, Harry F. Woods, $3; 2d, L. E. Small, $1.
ROSES.—Best twenty-five blooms, any variety other than American Beauty:
1st, Waban Rose Conservatories, $5.
MIGNONETTE.— Best twenty-five spikes of any one variety:
1st, Wm. Nicholson, $3; 2d, A. H. Fewkes, $2.
SWEET PEAS.— Best one hundred spikes of any one variety:
1st, Wm. Sim, $3; 2d, Malcolm Orr, $2.

Special Prize Offered By Horticulture.

Best vase of Carnations, one hundred blooms in not over three varieties, arranged for effect with other foliage but not with other flowers; color scheme and arrangement considered in making award.
1st, M. A. Patten, $10.

Gratuities: —

John McFarland, Bouquet of Lily of the Valley, $2.
Francis Skinner Jr., Chinese Primroses, $2.
Harvard Botanic Garden, Display of *Primula obconica*, $6.
Harvard Botanic Garden, Display of Lachenalias, $3
A. M. Davenport, Cyclamens, $3.
Mrs. A. W. Blake, *Cypripedium Dautheri*, $1.
Jos. H. White, Carnations, $1.

Spring Exhibition.

March 23, 24, 25, 26.

Theodore Lyman Fund.

Indian Azaleas.— Six distinct named varieties:
1st, E. W. Breed, $15; 2d, Edward MacMulkin, $12.

Society's Prizes.

Palms.— Pair in pots or tubs:
1st, Mrs. John L. Gardner, $15; 2d, Geo. F. Fabyan, $12.
Orchids.— Three plants:
1st, Geo. F. Fabyan, $10; 2d, Edmund W. Converse, $6; 3d, Edward J. Mitton, $4.
Hard-wooded Greenhouse Plants.— Two or more genera, four in bloom, Azaleas excluded:
1st, Ed. A. Clark, $10.
Acacia.— Specimen plant:
1st, Dr. C. G. Weld, $10; 2d, Dr. C. G. Weld, $6; 3d, E. W. Converse, $4.
Climbing Rose.— Specimen plant in bloom:
1st M. H. Walsh, $10; 2d, Francis Skinner, Jr., $6; 3d, M. H. Walsh, $4.
Collection of Rambler and other Roses.— Suitable for landscape and decorative purposes, grown in pots or tubs:
1st, M. H. Walsh, $35; 2d, M. H. Walsh, $25; 3d, M. H. Walsh, $15.
Hardy Primroses and Polyanthuses.— Twelve plants of distinct varieties:
1st, William Whitman, $8; 2d, Mrs. John L. Gardner, $5; 3d, Wm. Whitman, $3.
Cyclamens.— Ten plants:
1st, Geo. F. Fabyan, $20; 2d, Edward J. Mitton, $15.

Ten plants in not over seven-inch pots:
1st, Geo. F. Fabyan, $12; 2d, Dr. C. G. Weld, $8; 3d, Geo. F. Fabyan, $6.

Single plant:
1st, Geo. F. Fabyan, $5; 2d, Edward A. Clark, $4; 3d, E. A. Clark, $3.

Cinerarias.— Six varieties:
1st, Geo. F. Fabyan, $15.

Three varieties:
1st, Geo. F. Fabyan, $8; 2d, Edmund W. Converse, $6.

Cineraria Stellata.— Six plants:
1st, Mrs. John L. Gardner, $12; 2d, Mrs. John L. Gardner, $8.

Hyacinths.— Twelve named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $10; 2d, Ed. A. Clark, $6; 3d, Bussey Institution, $6.

Six named varieties, in pots, one in each pot:
1st, Ed. A. Clark, $5; 2d, Mrs. John L. Gardner, $4; 3d, Bussey Institution, $3.

Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, William Whitman, $10; 2d, Mrs. John L. Gardner, $6; 3d, Ed. A. Clark, $4.

Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Geo. F. Fabyan, $5; 2d, Mrs. John L. Gardner, $4; 3d, Mrs. John L. Gardner, $3.

Tulips.— Six eight-inch pans, nine bulbs of one variety in each:
1st, Wm. Whitman, $8; 2d, Ed. A. Clark, $6.

Three eight-inch pans, nine bulbs of one variety in each:
1st, Ed. A. Clark, $4; 2d, Wm. Whitman, $3; 3d, Ed. A. Clark, $2.

Three ten-inch pans, twelve bulbs of one variety in each:
1st, William Whitman, $6; 2d, Ed. A. Clark, $5; 3d, Ed. A. Clark, $4.

Polyanthus Narcissus.— Four eight-inch pots, five bulbs in each:
1st, Mrs. John L. Gardner, $6; 2d, Ed. A. Clark, $4.

Jonquils.— Six pots or pans, not exceeding eight inches:
1st, Mrs. John L. Gardner, $4; 2d, Wm. Whitman, $3; 3d, Ed. A. Clark, $2.

Narcissuses.— Six eight-inch pots or pans, distinct varieties, single or double:
1st, Wm. Whitman, $10; 2d, Mrs. J. L. Gardner, $6; 3d, E. A. Clark, $4.

Three eight-inch pots or pans:
1st, Wm. Whitman, $5; 2d, E. A. Clark, $3; 3d, E. A. Clark, $2.

Crocuses.— Three ten-inch pans, three distinct varieties:
1st, Bussey Institution, $4.

Roman Hyacinths.— Six eight-inch pans, ten bulbs in a pan:
1st, E. A. Clark, $5; 2d, Wm. Whitman, $3.

Display of Easter Plants.— Bulbous plants, except Easter Lilies and Cyclamens, excluded:
1st, E. A. Clark, $25; 2d, Edward MacMulkin, $15.
General Display of Spring Bulbous Plants.— All classes:
1st, Bussey Institution, $30; 2d, E. A. Clark, $20.

Flowers.

Special Prizes.

Mrs. Anna C. Ames, Boston.

Rose "Mrs. Oliver Ames." Vase of fifty blooms:
1st, W. H. Elliott, $30; 2d, Waban Rose Conservatories, $20.

Gardeners' and Florists' Club of Boston.

Vase of Mixed Roses.— Twenty-five blooms, not less than four varieties:
1st, Col. Chas. Pfaff, $25; 2d, W. H. Elliott, $15.

Society's Prizes.

Hybrid Perpetual Roses.— Twelve blooms, not less than four named varieties:
1st, Col. Chas. Pfaff, $10; 2d, E. A. Clark, $6; 3d, Miss S. B. Fay, $4.
Twelve blooms of Ulrich Brunner:
1st, J. McFarland, $10.
Tender Roses in Vases.— Twelve blooms of American Beauty:
1st, Arthur Griffin, $15; 2d, W. H. Elliott, $12.
Twenty-five blooms of the Bride:
1st, Wm. H. Elliott, $10.
Twenty-five blooms of Bridesmaid:
1st, Wm. H. Elliott, $10.
Twenty-five blooms of Liberty:
1st, Wm. H. Elliott, $12.
Twenty-five blooms of any other variety:
3d, Wm. H. Elliott, $4.
Carnations.— Vase of one-hundred cut blooms, of one variety, with foliage:
1st, F. R. Pierson Co., $10; 2d, Patten & Co., $8; 3d, Peter Fisher, $6.
Twenty-five blooms of any Crimson variety:
1st, Peter Fisher, "Ruby," $5; 2d, Wm. Nicholson, "Harry Fenn," $4; 3d, Patten & Co., "Harry Fenn," $3.
Twenty-five blooms of any Dark Pink variety:
1st, Peter Fisher, "Nelson Fisher," $5; 2d, Patten & Co., "Nelson Fisher," $4; 3d, Wm. Nicholson, "Mrs. T. W. Lawson," $3.
Twenty-five blooms of any Light Pink variety:

1st, Wm. Nicholson, "Enchantress," $5; 2d, Peter Fisher, "Enchantress," $4; 3d, Patten & Co., "Enchantress," $3.

Twenty-five blooms of any named Scarlet variety:

1st, Guttman & Weber, "Victory" $5; 2d, Peter Fisher, "Flamingo," $4; 3d, F. R. Pierson Co., "Flamingo," $3.

Twenty-five blooms of any named White variety:

1st, Peter Fisher, "Lady Bountiful," $5; 2d, Patten & Co., "Lady Bountiful," $4; 3d, Peter Fisher, "Princess," $3.

Twenty-five blooms of any named Yellow Variegated variety:

1st, Backer & Co., "Eldorado," $5; 2d, Patten & Co., $4; 3d, Backer & Co., $3.

Twenty-five blooms of any named White Variegated variety:

1st, Patten & Co., "Mrs. M. A. Patten," $5; 2d, H. A. Stevens Co., "Mrs. M. A. Patten," $4; 3d, Peter Fisher, "Mrs. M. A. Patten," $3.

Pansies.— Forty-eight cut blooms, not less than twenty-four varieties:

1st, James Anderson, $3; 2d, Mrs. E. M. Gill, $2.

Violets.— Bunch of one hundred blooms Lady Hume Campbell:

1st, H. F. Woods, $3; 2d, L. E. Small, $2; 3d, E. Bingham, $1.

Bunch of one hundred blooms any other double variety:

1st, F. R. Pierson Co., "Marie Louise," $3; 2d, Norris F. Comley, "Neapolitan," $2.

Bunch of one hundred blooms Princess of Wales:

1st, H. F. Woods, $3.

Bunch of one hundred blooms any other single variety:

1st, Norris F. Comley, "La France," $3.

Orchids.— Display of not less than six genera and fifteen named species and varieties, filling not less than twenty bottles:

1st, Langwater Gardens, Appleton Silver Gilt Medal; 3d, Col. Chas. Pfaff, Appleton Bronze Medal.

Gratuities: —

Edmund W. Converse, Display of Cyclamens, Primulas, etc., $8.

R. & J. Farquhar & Co., Display of Spring Bulbs and Plants, $20.

Bussey Institution, Forced Shrubs and Plants, $15.

Harvard Botanic Garden, Display of *Primula obconica*, Palms, etc., $30.

F. R. Pierson Co., Vase of American Beauty Roses, $5.

The Misses Eldridge, *Bougainvillæa spectabilis* in sprays, $3.

Geo. McWilliam, Cut sprays of *Cymbidium eburneo-Lowianum*, $3.

Lager & Hurrell, Display of Orchids, $10.

Julius Roehrs Co., Display of Orchids, $8.

Edward MacMulkin, Yellow Marguerites, $1.

" " Palms and Bay Trees, $10.

James L. Little, Antirrhinums, $1.

Mrs. E. M. Gill, Display of flowers, $2.

Miss Sarah B. Fay, Hybrid Roses, $2.

Wm. Nicholson, Display of Carnations, $2.

M. A. Patten, Three vases Carnations, $2.
L. E. Small, Vase of white seedling Carnation, "No. 3," $2.
Guttman & Weber, Vase of Carnation, "Victory," $2.
M. A. Patten, Mignonette, $1.
Carl Jurgens, Vase of Lily of the Valley, $1.
Wm. Sim, Two vases Sweet Peas, $4.
M. H. Walsh, Group of Seedling Rose, "Urania," $8.

April 29.

Plants.

Indian Azaleas.— Three plants, distinct varieties, in pots, named:
2d, Geo. F. Fabyan, $8.
Calceolarias.— Six varieties in pots:
1st, Geo. F. Fabyan, $15; 2d, Geo. F. Fabyan, $10.
Pelargoniums.— Six named Show or Fancy varieties:
1st, Geo. F. Fabyan, $10; 2d, Geo. F. Fabyan, $6.

Flowers.

Tulips.— Forty-eight blooms, not less than twelve named varieties:
1st, W. J. Clemson, $5.
Hardy Narcissuses.— Collection of fifty vases of not less than ten named varieties:
1st, W. J. Clemson, $10.
Pansies.— Forty-eight blooms, not less than twenty-four varieties:
1st, Mrs. J. B. Shurtleff, Jr., $3; 2d, Mrs. E. M. Gill, $2.

Gratuities: —

Mrs. E. M. Gill, Display of flowers, $2.
E. W. Converse, Display of Astilbe, $2.

Rhododendron Exhibition.

June 3 and 4.

Plants.

Orchids.— Display, arranged for effect, with foliage plants:
1st, J. E. Rothwell, Appleton Silver Gilt Medal.

Flowers.

H. H. Hunnewell Fund.

Rhododendrons.— Twelve distinct varieties, of unquestioned hardiness, named:

1st, Edward A. Clark, $10.

Six distinct varieties of unquestioned hardiness:

1st, Mrs. J. L. Gardiner, $5; 2d, Blue Hill Nurseries, $3; 3d, W. J. Clemson, $2.

Hardy Azaleas.— Twelve varieties, one vase of each:

1st, William Whitman, $6; 2d, T. C. Thurlow, $4.

Six varieties, one vase of each:

1st, Mrs. J. L. Gardner, $4; 2d, Mrs. J. L. Gardner, $3; 3d, T. C. Thurlow & Co., $1.

Cluster of trusses, one variety:

1st, William Whitman, $3; 2d, William Whitman, $2.

Society's Prizes.

German Irises.— Thirty-six vases of three trusses each, not less than twelve varieties:

1st, William Whitman, $5.

Hardy Pyrethrums.— Display of thirty bottles, single and double, six or more varieties:

1st, Mrs. J. L. Gardner, $5; 2, W. L. Clemson, $3.

Hardy Ornamental Trees and Shrubs.— Display of not less than twenty genera and thirty species and varieties, named, cut blooms or foliage:

1st, E. A. Clark, $10; 2d, Mrs. John L. Gardner $6; 3d, W. H. Heustis, $4.

Tree Peonies.— Not less than five varieties:

1st, Mrs. J. L. Gardner, $10; 2, T. C. Thurlow & Co., $8.

Hardy Herbaceous Flowers.— Distinct species and varieties, not less than ten genera, grasses admissible, thirty bottles:

1st, Blue Hill Nurseries, $8; 2d, W. J. Clemson, $6.

Gratuities: —

T. C. Thurlow, Peonies and Azaleas, $2.

Edward MacMulkin, Display of Palms and Foliage plants, $15.

W. Whitman, Collection of Pyrethrums, $2.

W. Whitman, Collection of Iris and Sweet Williams, $4.

Mrs. E. M. Gill, Display of Flowers, $3.

Mrs. J. L. Gardner, Display of Rhododendrons, $6.

E. O. Orpet, Vase of *Odontoglossum crispum*, $3.

Peony Exhibition.

June 17.

Flowers.

Special prizes offered by Kelway & Son, Langport, England.

Herbaceous Peonies.— Collection of eighteen named varieties, single or double:

1st, H. A. Stevens Co., Silver Gilt Medal; 2d, Miss A. M. Means, Bronze Medal.

Society's Prizes.

Herbaceous Peonies.— Collection of thirty or more varieties, double:
1st, T. C. Thurlow, $12; 2d, H. A. Stevens Co., $8; 3d, G. Hollis, $6; 4th, Dr. C. S. Minot, $4.
Collection of twelve named varieties, double:
1st, O. B. Hadwen, $6; 2d, G. Hollis, $4.
Specimen bloom:
1st, T. C. Thurlow, "Mad. Boulanger," $2; 2d, T. C. Thurlow, "Lady Alexandra Duff," $1.
Collection of twelve or more named varieties, single:
1st, T. C. Thurlow, $4; 2d, G. Hollis, $3.
Collection of twelve or more named varieties, Japanese single:
1st, G. Hollis, $4.
Vase of blooms on long stems, arranged for effect in the Society's large China vases:
1st, Mrs. J. L. Gardner, $10; 2d, Blue Hill Nurseries, $6; 3d, E. L. Lewis, $4.

Gratuities: —

E. J. Shaylor, Display of named Peonies, $8.
T. C. Thurlow, " " " " $6.
E. A. Clark, " " " " $4.
Mrs. E. M. Gill, Display of Peonies and Hardy Roses, $5.
Wm. Nicholson, Four vases Peonies, $2.
E. A. Wood, Peonies and Oriental Poppies, $3.
W. Heustis & Son, Display of Hardy Shrubs, $2.
Blue Hill Nurseries, Display of Hardy Perennials, $5.

Rose and Strawberry Exhibition.

June 24 and 25.

Flowers.

Special Prizes.

Theodore Lyman Fund.

Hardy Roses.— Twenty-four distinct named varieties, three of each variety:
1st, Miss S. B. Fay, $25; 2d, Miss S. B. Fay, $20; 3d, W. J. Clemson, $15.

Society's Prizes.

Twelve named varieties, three of each:
1st, Miss S. B. Fay, $12.
Six named varieties, three of each:
1st, Miss S. B. Fay, $6.
Twenty-four named varieties, one of each:
1st, Miss S. B. Fay, $12.
Eighteen named varieties, one of each:
1st, Miss S. B. Fay, $8; 2d, A. F. Estabrook, $6.
Twelve named varieties, one of each:
2d, Mrs. C. C. Converse and Mrs. Lester Leland, $4.
Six named varieties, one of each:
2d, A. F. Estabrook, $3.
Twenty-four blooms of Mme. Gabrielle Luizet:
1st, Miss S. B. Fay, $6; 2d, A. F. Estabrook, $4.
Six blooms of Alfred Colomb:
3d, Mrs. C. C. Converse and Mrs. Lester Leland, $1.
Six blooms of Baroness Rothschild:
1st, Estate of J. C. Chaffin, $3; 2d, Miss S. B. Fay, $2; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $1.
Six blooms of Mrs. John Laing:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $3.
Six blooms of General Jacqueminot:
1st, Miss S. B. Fay, $3.
Six blooms of Ulrich Brunner:
1st, Miss S. B. Fay, $3; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $2.
Six blooms of any other variety:
1st, Miss S. B. Fay, "Margaret Dickson," $3; 2d, Miss S. B. Fay, "Mrs. R. G. Sharman Crawford," $2; 3d, W. J. Clemson, "Magna Charta," $1.
Best three blooms of a variety introduced since 1902:
1st, Miss S. B. Fay, "Frau Karl Druschki," $3.
General Display. One hundred bottles of Hardy Roses in the Society's racks, buds admissible:
1st, Miss S. B. Fay, $15; 2d, Mrs. E. M. Gill, $10; 3d, W. J. Clemson, $8. 4th, Estate of J. C. Chaffin, $6.
Sweet Williams.— Display of eighteen vases of three trusses each, not less than six varieties:
1st, W. Whitman, $3; 2d, W. Whitman, $2; 3d, Anthony McLaren, $1.

Gratuities: —

Henry A. Dreer, Display of Aquatics, $8.
R. & J. Farquhar & Co., Display of Palms, $8.
Mrs. E. A. Wilkie, Display of Roses, $2.

Mrs. Henry L. Foote, Display of Tea and Hybrid Tea Roses, $10.
Mrs. J. L. Gardner, Display of *Campanula Medium*, $6.
M. H. Walsh, Display of Rambler Rose, "Lady Gay," $6.
A. F. Estabrook, Three plants Astilbe, $2.
William Whitman, Herbaceous Plants, $5.
Wm. C. Winter, Display of flowers, $1.
Blue Hill Nurseries, Display of Herbaceous Plants, $6.
E. J. Shaylor, Display of Peonies, $4.
T. C. Thurlow, " " " $6.
A. F. Estabrook, " " " $3.
Mrs. E. M. Gill, " " " $1.
Harvard Botanic Garden, Display of Aquatics, $8.
Mrs. E. M. Gill, Display of Roses, $5.
Dr. C. G. Weld, " " " $5.
Frederic J. Rea, Display of Herbaceous flowers and Roses, $3.

July 8 and 9.

Flowers.

Hardy Roses.— Collection, named, not less than twelve varieties filling fifty vases, one rose in each vase:
1st, Miss S. B. Fay, $12; 2d, E. A. Clark, $8; 3d, Miss S. B. Fay, $4.

Iris Kæmpferi.— Collection of varieties filling twenty-five vases:
1st, Mrs. J. L. Gardner, $8; 2d, T. C. Thurlow, $5.

Campanula Medium.— Collection, not less than fifteen vases:
1st, Wm. Whitman, $4; 2d, A. E. Hartshorn, $3; 3d, Wm. Whitman, $2.

Delphiniums.— Display, thirty vases of three spikes each:
1st, Wm. Whitman, $10; 2d, Mrs. J. L. Gardner, $6.

Sweet Peas.— Display of named varieties filling thirty vases, twenty-five sprays in each, arranged with their own foliage:
1st, Wm. Whitman, $10.

Display of twelve named varieties, twelve sprays of each:
1st, T. C. Sias, $4; 2d, Joseph Thorpe, $3; 3d, Mrs. L. A. Towle, $2.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties, not less than ten genera:
1st, Blue Hill Nurseries, $8; 2d, Bay State Nurseries, $6; 3d, F. J. Rea, $4.

Gratuities: —

Blue Hill Nurseries, Display of Herbaceous Plants, $4.
Mrs. J. B. Lawrence, " " " " $2.
Harvard Botanic Garden, " " " " $10.
Mrs. J. B. Lawrence, Crimson Rambler Roses, etc., $1.

Mrs. E. M. Gill, Display of Flowers, $3.
H. A. Stevens Co., Phlox and Iris, $1.
M. H. Walsh, Display of Rambler Roses, $3.
Mt. Desert Nurseries, Display of Herbaceous Flowers, $10.
F. H. Hills, Display of Delphiniums, $1.
R. & J. Farquhar & Co., Display of Herbaceous Flowers, $3.
Edward MacMulkin, Display of Palms, $5.
F. J. Rea, Display of Rose Dorothy Perkins, $1.

JULY 22.

Gratuities: —

Mrs. E. M. Gill, Display of Flowers, $3.
A. E. Hartshorn, Display of Hollyhocks and Petunias, $5.
T. C. Thurlow, Display of Phlox, $5.
H. A. Stevens Co., " " " $2.
Mrs. L. M. Towle, Display of Sweet Peas, $2.
Harvard Botanic Garden, Display of Aquatics, $8.
" " " " " Achimines, $6.
Mrs. A. W. Blake, Specimen plant of *Nicotiana Sanderæ*, $2.

AUGUST 5.

PERENNIAL PHLOXES.— Twelve named varieties, one truss of each:
2d, H. A. Stevens Co., $6; 3d, Blue Hill Nurseries, $4.
HARDY HERBACEOUS FLOWERS.— Thirty bottles, distinct species and varieties:
1st, Blue Hill Nurseries, $8; 2d, Bay State Nurseries, $6.

Gratuities: —

Joseph Thorpe, Display of Sweet Peas, $2.
Bay State Nurseries, Herbaceous Flowers, $1.
Mrs. E. M. Gill, Display of Flowers, $1.
Blue Hill Nurseries, Display of Herbaceous Flowers, $4.
Mrs. L. M. Towle, Display of Dahlias, $3.
Harvard Botanic Garden, Display of Herbaceous Flowers, $8.

AUGUST 12.

FLOWERS.

ANNUALS.— General display, named, not less than twenty-five varieties, filling not less than one hundred bottles:

1st, Mrs. J. L. Gardner, $10; 2d, Mrs. E. M. Gill, $8.

Gratuities: —

Harvard Botanic Garden, Display of Herbaceous Plants, $4.
" " " " " Annuals, $6.
Mrs. L. A. Towle, " " " $3.
Blue Hill Nurseries, Display of Phlox, $4.
Mrs. L. M. Towle, Display of Dahlias, $4.
Joseph Thorpe, Asters and Sweet Peas, $1.
W. G. Winsor, Dahlias, $1.

August 19.

Flowers.

Perennial Phloxes.— General display in not less than thirty vases:
1st, Blue Hill Nurseries, $6; 2d, T. C. Thurlow, $5; 3d, Wm. C. Winter, $3.

Gladioli.— Twenty named varieties in spikes:
1st, John Lewis Childs, $5.

Display of named and unnamed varieties, filling one hundred vases:
1st, John Lewis Childs, $8.

Gratuities: —

Harvard Botanic Garden, Display of Herbaceous Plants and Annuals, $8.
Mrs. L. M. Towle. Display of Dahlias, $4.
Wm. C. Winter " " " $2.
Wm. G. Winsor " " " $2.
Mrs. L. M. Towle, Collection of Seedling Dahlias, $1.
Mrs. E. M. Gill, Display of Flowers, $2.
Mrs. J. L. Gardner, *Clerodendron fallax*, $1.

August 26.

Flowers.

Theodore Lyman Fund.

China Asters.— Of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, Mrs. L. M. Towle, $8; 2d, H. B. Watts, $6; 3d, Mrs. J. L. Gardner, $4.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties:
1st, Blue Hill Nurseries, $8.

Gratuities: —

Mrs. E. M. Gill, Display of Flowers, $2.
W. G. Winsor, " " Dahlias, $3.
A. F. Johnson, Seedling Dahlias, $1.
Harvard Botanic Garden, Cut flowers of Tuberous Begonias, $2.
Blue Hill Nurseries, Display of Phlox, $2.
Mrs. J. L. Gardner, Display of Asters, $3.
Harvard Botanic Garden, Display of Asters, $5.
" " " " " Herbaceous Flowers, $8.

September 2.

Gratuities: —

W. G. Winsor, Display of Asters, $1.
A. E. Johnson, " " Seedling Dahlias, $1.

Annual Exhibition.

September 14, 15, 16, 17.

Plants.

H. H. Hunnewell Fund.

Hardy Coniferous Trees.— Display in pots and tubs:
1st, Blue Hill Nurseries, $25; 2d, Blue Hill Nurseries, $10.

Palms.— Pair in pots or tubs:
1st, Mrs. J. L. Gardner $12; 2d, A. F. Estabrook $10; 3d, E. MacMulkin, $8.

Greenhouse Plants.— Best finished group containing foliage plants of all descriptions, arranged for effect:
1st, Mrs. J. L. Gardner, $50; 2d, E. MacMulkin, $35.

Six Greenhouse and Stove plants, decorative specimens of different named varieties:
1st, Mrs. J. L. Gardner, $20; 2d, Mrs. J. L. Gardner, $15.

Flowering Greenhouse Plant.— Single specimen, named:
1st, Mrs. J. L. Gardner, $8.

Caladiums.— Six named varieties:
1st, Mrs. J. L. Gardner, $10.

Ferns.— Five named varieties, no Adiantums admissible:
1st, A. F. Estabrook, $12.

Specimen other than Tree Fern:
1st, Mrs. J. L. Gardner, $4; 2d, A. F. Estabrook, $3; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $2.

Adiantums.— Five named species:
1st, A. F. Estabrook, $10.

Lycopods.— Four named species:
2d, Mrs. C. C. Converse and Mrs. Lester Leland, $3.

Dracænas.— Six named varieties:
1st, Mrs. J. L. Gardner, $8.

Cycad.— Single plant, named:
2d, A. F. Estabrook, $6.

Begonia Rex.— Ten pots of ten varieties:
1st, Mrs. J. L. Gardner, $10.

Ouvirandra Fenestralis.—
1st, Mrs. J. L. Gardner $6; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $4.

Flowers.

Dahlias.— Show, eighteen blooms, named varieties:
1st, H. F. Burt, $4; 2d, E. W. Ela, $3; 3d, J. K. Alexander, $2.

Fancy, eighteen blooms, named varieties:
1st, Wm. H. Symonds, $4; 2d, G. D. Cook, $3; 3d, E. W. Ela, $2.

Cactus, eighteen blooms, named varieties:
1st, H. F. Burt, $4; 2d, J. K. Alexander, $3; 3d, E. W. Ela, $2.

Decorative, twelve blooms, named varieties:
1st, E. W. Ela, $3; 2d, H. F. Burt, $2; 3d, R. P. Struthers, $1.

Show, twelve blooms, named varieties:
1st, A. E. Johnson, $3; 2d, J. K. Alexander, $2; 3d, E. W. Ela, $1.

Fancy, twelve blooms, named varieties:
1st, G. D. Cook, $3; 2d, J. H. Flint, $2; 3d, E. W. Ela, $1.

Best single bloom, of any class, introduction of 1903 or later.
1st, W. G. Winsor, "Mme. Victor Vassier," $2; 2d, A. E. Johnson, "Jeanne Charmet," $1.

Pompon, twelve vases of three blooms each, named varieties:
1st, J. K. Alexander, $3; 2d, Geo. D. Cook, $2; 3d, E. W. Ela, $1.

Single, twelve vases, of three blooms each, named varieties:
1st, Edgar W. Ela, $3; 2d, Geo. D. Cook, $2.

General display one hundred or more bottles:
1st, G. H. Walker, $8; 2d, E. W. Ela, $6; 3d, Mrs. L. M. Towle, $4.

Hardy Herbaceous Flowers.— Thirty bottles, distinct species and varieties:
1st, Blue Hill Nurseries, $8; 2d, Blue Hill Nurseries, $6; 3d, Mrs. E. M. Gill, $4.

Gratuities: —

Harvard Botanic Garden, Display of Tuberous Begonias, $5.
" " " " " Herbaceous Plants, $10.
" " " " " Economic and other Plants, $8.
" " " " " Nepenthes and Ouvirandra, $10.
" " " Group of Foliage Plants, $60.
Mrs. N. P. Brown, Display of Tuberous Begonias, $2.
R. P. Struthers, Display of Dahlias, $3.
The Hon. Mrs. G. Duncan, Display of Dahlias, $2.
J. K. Alexander, Gladiolus, $3.
Edward MacMulkin, Display of Evergreen Trees, $8.
Chas. S. Pratt, Collection of Gladioli, $3.
W. B. Hunt, Dahlias, $1.
R. & J. Farquhar & Co., Display of Foliage Plants and *Lilium Philippinense*, $15.
Henry A. Dreer, Display of Aquatics, $6.
Julius Roehrs, Display of Foliage Plants, $5.
Lager & Hurrell, Display of Orchids, $5.
Edward MacMulkin, Display of Foliage Plants, $15.
E. B. Wilder, Vase of *Hydrangea paniculata grandiflora*, $1.
W. W. Rawson, Display of *Impatiens Holstii*, $5.
Mrs. E. M. Gill, Display of Dahlias, $2.
Geo. B. Gill, *Ficus elastica variegata*, grown in dwelling house, $1.

Chrysanthemum Show.

November 9, 10, 11, 12,

Plants.

Henry A. Gane Memorial Fund.

Chrysanthemums.— Best specimen plant of Mrs. Jerome Jones, Yellow Mrs. Jerome Jones, or any of the sports or seedlings of these two varieties:
1st, J. S. Bailey, $10.
Best specimen plant of Marcia Jones, Henry A. Gane, Mrs. H. A. Gane, or any of the sports or seedlings of these three varieties:
1st, E. J. Mitton, $10.

Society's Prizes.

Display of eight named plants in not over twelve-inch pots, any or all classes, distinct varieties:
1st, J. S. Bailey, $75; 2d, E. W. Converse, $50.

Two Japanese Incurved:
1st, J. S. Bailey, $10; 2d, E. W. Converse, $6.
Two Reflexed, distinct named varieties:
1st, J. S. Bailey, $10.
Specimen Japanese Incurved, named variety:
1st, J. S. Bailey, $6; 2d, E. W. Converse, $4.
Specimen Reflexed, named variety:
1st, J. S. Bailey, $6; 2d, E. W. Converse, $4.
Specimen Pompon, named variety:
1st, E. W. Converse, $6.
Six plants of six different varieties, grown to six stems with one bloom to each, in not over seven-inch pots:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $15; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $10.
Twelve plants naturally grown, without disbudding, may be arranged with palms and ferns for effect:
2d, E. W. Converse, $30; 3d, Mrs. J. L. Gardner, $25.

Flowers.

Representative collection of classes, labeled in accordance with the classification of the Chrysanthemum Society of America:
1st, D. F. Roy, $30; 2d, Geo. F. Fabyan, $25.

Josiah Bradlee Fund.

Twenty-five blooms of twenty-five distinct varieties, named:
1st, E. D. Jordan, $25; 2d, Thomas Doliber, $15; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $10.
Six vases, six named varieties, ten blooms in each:
1st, Thomas Doliber, $30; 2d, M. F. Plant, $25.

Henry A. Gane Memorial Fund.

Chrysanthemums.— Best six specimen blooms of Mrs. Jerome Jones, Yellow Mrs. Jerome Jones, or any of the sports or seedlings of these two varieties:
1st, Arthur F. Whitin Yellow Mrs. Jerome Jones, $6; 2d, A. F. Whitin, Mrs. Jerome Jones, $4.
Best six specimen blooms of Henry A. Gane, Bessie Jones, Marcia Jones, or any of the sports of these three varieties:
1st, Thomas Doliber, $5.

Society's Prizes.

Twelve blooms Incurved, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $6.

Twelve blooms Japanese, named:
1st, Peter B. Robb, $8; 2d, E. D. Jordan, $6; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $4.
Twelve blooms Japanese Incurved, named:
1st, Peter B. Robb, $8; 2d, E. D. Jordan, $6; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $4.
Twelve blooms Reflexed, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $8.
Twelve blooms Anemone, named:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $6.
Twelve sprays Pompons, named, distinct:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $5; 2d, P. B. Robb, $3.
Six best varieties, named, introductions of the current year:
1st, Peter B. Robb, $6; 2d, Morton F. Plant, $4.
Vase of ten blooms on long stems, Pink, named:
1st, T. Doliber, $10; 2d, James Nicol, $8; 3d, A. F. Whitin, $6.
Vase of ten blooms on long stems, Red, named:
1st, G. F. Fabyan, $10; 2d, Thomas Doliber, $8.
Vase of ten blooms on long stems, White, named:
1st, T. Doliber, $10; 2d, M. F. Plant, $8; 3d, Mrs. John Shepard, $6.
Vase of ten blooms on long stems, Yellow, named:
1st, T. Doliber, $10; 2d, M. F. Plant, $8; 3d, A. F. Whitin, $6.
Vase of ten blooms on long stems, any other color, named:
1st, G. F. Fabyan, $10; 2d, T. Doliber, $8; 3d, T. Doliber, $6.
Orchids.— Display of named species and varieties, filling not less than twenty bottles:
1st, J. E. Rothwell, Appleton Silver Gilt Medal; 2d, Col. Chas. Pfaff, Appleton Silver Medal.
Carnations.— Twenty-five blooms of any named Crimson variety:
1st, Wm. Nicholson, $4; 2d, Backer & Co., $3; 3d, S. J. Goddard, $2.
Twenty-five blooms of any named Dark Pink variety:
1st, G. N. Black, $4.
Twenty-five blooms of any named Light Pink variety:
1st, Wm. Nicholson, $4; 2d, S. J. Goddard, $3; 3d, Backer & Co., $2.
Twenty-five blooms of any named Scarlet variety:
1st, Cottage Gardens, $4.
Twenty-five blooms any named White variety:
1st, Wm. Nicholson, $4; 2d, H. A. Steven Co., $3.
Twenty-five blooms of any named Yellow Variegated variety:
1st, Backer & Co., $4.
Twenty-five blooms of any named White Variegated variety:
1st, S. J. Goddard, $4; 2d, Wm. Nicholson, $3; 3d, G. N. Black, $2.

Gratuities: —

Lager & Hurrell, Display of Orchids, $12.

R. Vincent Jr. & Son, Display of cut Hardy Chrysanthemums, $15.
Wm. Nicholson, Five vases Carnations, $5.
Mrs. E. M. Gill, Display of Chrysanthemums, $8.
Edward MacMulkin, Display of *Cattleya labiata*, $5.
Waban Rose Conservatories, Vase of rose Wellesley, $2.
Warren Heustis & Son, *Euonymus Bungeanus*, $1.
Henry H. Barrows & Son, Display of *Nephrolepis Whitmani* and *Barrowsi*, $8.
R. & J. Farquhar & Co., Display of Palms, $25.
Edward MacMulkin, " " Foliage Plants, $40.
Mrs. A. W. Blake, Chrysanthemums and Palms, $15.
Thomas Doliber, Display of Chrysanthemums, $30.
James Nicol, Vase of Chrysanthemum Mrs. Jerome Jones, $1.
Julius Roehrs Co., Display of Orchids and Foliage Plants, $8.
James Fraser, Vase of Chrysanthemum Mrs. Thirkell, $3.

Society's Silver Gilt Medal.

March 4. Walter P. Winsor, Collection of Dendrobiums.

Society's Silver Medals.

February 11. Guttman & Weber, Seedling Carnation, Victory.
March 23. E. O. Orpet, Seedling Cattleya, C. × Olivia.
November 9. R. Vincent Jr. & Son, Display of cut sprays of Hardy Chrysanthemums.
November 9. R. & J. Farquhar & Co., Display of Ornamental Evergreens.
December 14. Oakes Ames, *Cypripedium × tonso-Charlesworthii.*

First Class Certificates of Merit.

January 21. W. A. Manda, *Cymbidium Tracyanum.*
February 11. S. J. Goddard, Seedling Carnation, Helen Goddard.
Wm. Palmer, Carnation Red Lawson.
Peter Murray, Seedling Carnation, Winsor.
J. E. Rothwell, New seedling Lælia, Mrs. M. Gratrix.
R. Witterstaetter, Seedling Carnation, The Aristocrat.
" " " Afterglow.
March 4. Walter P. Winsor, *Dendrobium Ainsworthii roseum.*
" " " " " " Venus.
" " " " " " *nobile Murrhinianum.*
" " F. L. Ames Estate, *Miltonia Bleuana virginalis.*
" 23. Henry H. Barrows & Son, *Nephrolepis Barrowsi.*

March 23. F. R. Pierson Co., Baby Rambler Rose Mme. Norbert Levavasseur.
March 23. M. F. Plant, *Phalænopsis amabilis Rimestadtiana.*
April 15. J. E. Rothwell, *Cattleya Guatemalensis.*
" 29. Robert Cameron, *Impatiens Holstii.*
June 3. E. O. Orpet, Lælia× Pacavia.
" 3. J. E. Rothwell, *Lælio-cattleya Lycedas.*
" 17. E. J. Shaylor, Peony Germain Bigot.
" " E. J. Shaylor, " Mad. Treyeran.
" " T. C. Thurlow " White Lady.
August 5. Blue Hill Nurseries, *Tritonia hybrida Germanica.*
" 5. " " " " " Geo. Davidson.
" 19. John Lewis Childs, Gladiolus Childsii America.
September 14. Henry H. Barrows, *Nephrolepis Whitmani.*
" 14. Henry A. Dreer, *Victoria Trickeri.*
November 9. M. A. Patten, Carnation Pink Patten.
" 9. Julius Roehrs Co., *Phoenix Roebelinii.*
December 14. Oakes Ames, *Zygo-colax×Amesianus.*
" 14. A. H. Fewkes, *Stevia serrata compacta variegata.*

Honorable Mentions.

January 21. W. A. Manda, Native Hybrid Lycaste.
" " " " " *Dendrobium nobile alba*, collected plant.
" " E. O. Orpet, New Hybrid Orchid, Cattleya×Susanæ.
February 4. Mrs. J. Montgomery Sears, Seedling Amaryllis.
" 11. E. N. Pierce & Son, Seedling Carnation, Gov. Guild.
" " M. A. Patten " " Mikado.
" " J. E. Rothwell, *Lælio-cattleya*, Adolphus.
March 4. Walter P. Winsor, *Dendrobium Euryalus.*
" 4 " " " " Dominii.
" 23. Lucius H. Foster Estate, Nephrolepis Dorchester.
" " The Misses Eldridge, *Bougainvillæa spectabilis.*
" " Lager & Hurrell, *Cypripedium glaucophyllum.*
" " Bayard Thayer, *Phlox divaricata*, forced in pans.
" " John E. Haines, Seedling Carnation, John E. Haines.
" " John Murchie " " Fred Burki.
" " Chicago Carnation Co., Carnation Cardinal.
" " W. J. & M. S. Vesey, Carnation Glendale.
" " Wm. Sim, Sweet Pea Earliest Sunbeam.
" " M. H. Walsh, Seedling Rose, 1903.
" " Julius Roehrs, *Ficus Cannonii.*
April 15. J. E. Rothwell, *Phaius Marthæ.*
June 3. J. E. Rothwell, *Cypripedium Lamonteanum.*
" 17. E. J. Shaylor, Peony M. Martin Cahuzac.

June 24. J. W. Howard, *Salvia Sclaria.*
" " George Hollis, Seedling Peony, No. 96.
" " " " " " " 95.
" " " " " " " 60.
July 8. Jackson Dawson, Seedling rose, Daybreak.
September 14. A. E. Johnson, Seedling Dahlia, No. 44.
" " " " " " " " 1, Gen. Miles.
" " " " " " " " 75.
" " " " " " " " 27.
" " " " " " " " 25.
" " " " " " " " 2.
" " " " " " " " 10.
" " " " " " " " 6.
" " " " " " " " 89.
" " Henry A. Dreer, *Nymphæa, Bissetii.*
" " " " " " *dentata magnifica.*
" " E. W. Green, Seedling single Dahlia, Mary Green.
" " Julius Roehrs, *Alpinia Sanderæ.*
" " Walter Hunnewell, *Sedum spectabile*, rose colored variety.
November 9. H. A. Jahn, Seedling light pink Carnation.
" " Peirce Farm, Carnation Marion Peirce.
" " G. B. Anderson, Seedling Carnation, No. 10, Scarlet.
" " Backer & Co., Pink sport from Carnation Enchantress.
" " Backer & Co., Seedling Carnation, No. 14, Yellow.
" " Peter Fisher, " " " 17, Pink.
" " Dr. H. P. Walcott " " " 1, Yellow.

Votes of Thanks.

February 11. Mrs. E. M. Gill, Display of Flowers.
March 23. Geo. F. Fabyan, *Schizanthus Weistonensis.*
" 23. James L. Little, Double Nasturtiums.
June 3. Lowthorpe School of Horticulture, Vase of Stocks.
" " R. & J. Farquhar & Co., Display of Herbaceous Flowers.
" " Walter Hunnewell, Display of Rhododendron Flowers.
" " Park Department, City of Boston, Display of Flowering Trees and Shrubs.
" 17. R. & J. Farquhar & Co., Display of Peony Festiva Maxima.
" 17. Walter Hunnewell, " " Rhododendrons.
" 24. H. A. Dreer, Herbaceous Plants.
" 24. Miss S. B. Fay, Display of Roses.
August 19. C. W. Parker, " " " .
" 26. Park Department, City of Boston, Display of Viburnums in fruit.

September 14. Park Department, City of Boston, Display of Shrubs in fruit.
November 9. H. A. Wheeler, *Cattleya labiata*, var.
" 9. J. E. Rothwell, *Cypripedium insigne Sanderæ*.
" 9. H. A. Stevens Co., Carnation Pink Lawson.

Cultural Awards.

Society's Silver Medals.

June 3. T. D. Hatfield, Superior cultivation of Hybrid Rhododendron, Lucidum.
September 14. Robert Cameron, Superior arrangement of Decorative Foliage Plants.

First Class Certificates of Merit.

February 11. Wm. C. Rust, Superior cultivation of *Dendrobium Ainsworthii*.
March 4. W. N. Craig, Superior cultivation of Phalænopsis.
" 23. Julius Roehrs Co., Superior cultivation of *Cymbidium Lowianum*.
April 29. Robert Marshall, Superior cultivation of *Amaryllis Vittata*.
" 29. Thomas T. Watt, Superior cultivation of *Saccolabium ampullaceum*.
June 3. Wm. C. Rust, Superior cultivation of Calceolaria Golden Gem.
October 28. J. L. Smith, Superior cultivation of *Zygopetatum Mackayi*.

Arthur H. Fewkes,
Robert Cameron,
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} *Committee on Plants and Flowers.*

REPORT OF THE COMMITTEE ON FRUITS FOR THE YEAR 1905.

BY WILFRID WHEELER, CHAIRMAN.

In reducing the Committee on Fruits from five members to three the wisdom of the Society has been clearly shown, for it is easier with the smaller number to do more concentrated and effective work, as greater responsibility is felt by each. The labor of the committee has been of necessity increased, especially at the larger shows; so it has been found more expedient to prepare all prize cards beforehand, leaving only the name of the successful exhibitor to be inserted on the card when the award is made by the committee. The season just passed has been a very uneven one with regard to fruit displayed, on account of some of the exhibitions occurring at a time when the fruits were not in their perfection. This was especially true of the Rose and Strawberry Exhibition and the committee believes that this date should be left open to suit the season.

The prospects for successful fruit growing in Massachusetts were never better than at present. There is an exodus of people to the country, a making of farms, planting of gardens and orchards by amateurs, a striving on the part of the commercial grower to produce quality rather than quantity in his fruit. All of which indicates a deeper interest in matters pertaining to horticulture and will lead to a larger consumption by the people of all kinds of the best fruits. On the other hand the fruit industry is threatened by the ravages of the gypsy and brown-tail moths as well as by numerous other pests, rusts, and fungus growths which may curtail fruit growing on an extensive scale. On this account, however, there is no need for real discouragement, only an opportunity for the gardener, the householder and amateur in general to exercise care and precaution and produce, in spite of these disadvantages, sound and excellent fruit.

The committee believes that there is a large field open to all classes of growers in the planting of dwarf apple and pear trees by which fruit can be produced in two and three years from the planting of the tree, instead of from eight to ten as in the case of standard trees. Fruit produced on the dwarf trees in one quarter the time and one-tenth the space is as good as that grown on standard trees. We think also that the spraying of fruit trees, bushes, vines, and plants should be very strongly impressed on the people of the state, and, if necessary, this Society should take some action in regard to the matter; also that pruning and trimming of orchards should be brought forcibly to the notice of their owners. These old orchards could be made to produce a fine quality of fruit provided proper care and scientific treatment were employed.

Boston imports from other states better apples than are produced here, for the reason that Massachusetts orchardists will not give their orchards the careful attention that is given in other parts of the country. Apples come from Oregon, Washington, Idaho, and California, and all sell for more per bushel than Massachusetts apples do by the barrel. The apple crop in Massachusetts last year was small but of better quality than usual. Summer apples are being more largely grown and prove quite profitable; the best varieties are Williams, Red Astrachan, and Duchess of Oldenburgh. For fall apples Gravenstein, Porter, McIntosh, and Wealthy are most grown; while for winter, Baldwin, Northern Spy, R. I. Greening, Sutton, Roxbury Russett, and King are popular varieties.

The pear crop last season was large and of very good quality. For market most growers are grafting their pears to Bosc in preference to Bartlett, while the amateurs still cling to the old varieties which add much to our exhibitions. Many of the old kinds are excellent pears for the table but are not suitable for shipping.

Peaches were quite abundant and of very fine quality the past season. They were profitable to New England growers as the crop from other states was small and not very good, except the Georgia peaches which coming early do not compete with the native fruit.

Japanese plums were never so abundant. This crop is becoming very popular in New England. We find new varieties are being added and, owing to their freedom from black knot, they

bid fair to depose the European varieties. Among the best Japanese plums are Abundance, Red June, Burbank, October Purple, Climax, Wickson, and Chabot.

The crop of native grapes in this state does not materially effect the market, for New York supplies it almost entirely. This, however, should not discourage the growing of a fruit which adds much to the pleasure and beauty of a garden and is not without its economic value. The long warm fall this past season ripened grapes to perfection so we had very fine specimens at our exhibitions. Concord, Niagara, Green Mountain, Worden, Moore's Early, and Delaware are most frequently grown in this state.

Among the small fruits grown in New England the strawberry is the most important. Owing to its adaptability and ease of culture it is grown by both professional and amateur with great success. The market conditions for this fruit are not as favorable as in former times for berries from New York and New Jersey are apt to conflict with the native crop. During the past season better prices were realized for strawberries than the year before and we believe that there is a good market for a strictly first class berry put up in an attractive form; trays in preference to baskets. In the other small fruits, currants, gooseberries, blackberries, and raspberries, the crop was fair and of good quality. We have never seen such fine gooseberries and currants as were exhibited in this hall last season.

The weather conditions for 1905 were ideal for all fruits except strawberries, blackberries, and raspberries. The long continued fair weather during September and October was excellent for apples, pears, grapes, and peaches. Plums were badly hurt by the heavy rain of September 4–6, and some of the peaches were also damaged at this time.

The committee regrets to say that there was a great lack of greenhouse fruits at the exhibitions of 1905. We feel sure there are growers who could produce excellent fruit and add much to our exhibitions. With the exception of grapes there were no greenhouse fruits shown and we believe that more encouragement should be given to the growing of fruit under glass.

We would also say that, with the exception of strawberries, there were very few new varieties of fruit exhibited this past season

and we would therefore call the attention of the Society to the advisability of requesting the different Agricultural colleges of New England to send specimens of fruit to our exhibitions. We feel sure that this would be of great interest and value to our exhibitors, as these institutions have opportunities for growing and testing fruit and developing new varieties that are not possessed by the amateur or commercial grower.

Owing to the late season, combined with dark and wet weather for a week previous to the exhibition, strawberries were not in the best condition at the Rose and Strawberry Show; hence there were not as many exhibited as were expected.

George F. Wheeler of Concord was the largest exhibitor of strawberries staging about fifty baskets, containing such varieties as Bubach, Brandywine, Minute Man, Clyde, Haverland, Sample, Marshall, Senator Dunlap, Nick Ohmer, Parson's Beauty, Mead, and Granville. These last two were exhibited for the first time. Granville, which was awarded first prize for any other variety in class 190, is a very promising garden variety of the best quality.

A. W. Clark of Providence, R. I., exhibited Cardinal, Challenge, and Victor for the first time. Cardinal is a very promising strawberry of most brilliant color, productive and of good quality. Mr. Clark showed a number of fruit stems of Cardinal from which one could see the wonderful productiveness of the plant. Victor is a very flat berry, cockscomb in shape; very large and of fair quality.

I. E. Coburn of Everett staged about twenty-five baskets of strawberries containing such varieties as Minute Man, Belmont, Jessie, Brandywine, Klondike, Haverland, and Marshall.

George V. Fletcher staged about eighteen baskets containing such varieties as Marshall, Belmont, Sample, and Brandywine. Mr. Fletcher's Marshalls were very fine.

Among other exhibitors in the fruit class were Miss S. B. Fay, John Ward, Warren Heustis & Son, and Elias L. Wheeler. N. B. White exhibited for the first time a seedling strawberry very much like Marshall in color and size, but of much better flavor and far more productive. This was awarded first prize for any new variety not previously exhibited.

S. H. Warren of Weston showed Great Scott, Golden Gate, Brandywine, Glen Mary, Sample, and Miller.

Golden Gate, a seedling of Mr. Warren's, is considered a very promising variety. It is large, rather shouldered, bright crimson, good quality, and very productive. It was first exhibited in 1904.

George V. and J. H. Fletcher exhibited very good cherries and Wm. C. Winter, fine Black Hamburg grapes.

At the exhibition of July 8–9 a very fine display of strawberries was seen, there being seven entries in this class alone with the following varieties, Golden Gate, Cardinal, Commonwealth, President, and North Shore; the last two for the first time. Mr. Benj. M. Smith of Beverly took all three prizes with President, Commonwealth, and North Shore, in order named.

The season was too early for raspberries but the exhibit of cherries was very fine, there being competition in all classes, and eight entries in class 217, with such varieties as Hyde's Seedling, Hovey, Yellow Spanish, Bigareau, Napoleon, and Early Richmond. Very fine Black Tartarian cherries were displayed by George V. Fletcher and Charles F. Curtis. Currants, both red and white were very good and there was keen competition in these classes. A gratuity was awarded to Wm. H. Spooner for Kansas Blackcaps which were very fine.

The second July exhibition brought out very fine currants and gooseberries. W. G. Kendall exhibited Wilder currant and Bates' gooseberry, each of which received first prize in its class.

A very fine showing of apples, pears, peaches, plums, and blackberries was seen at the Hall during the August exhibitions. Peaches and plums were especially good and there was keen competition in all these classes. The committee would specially commend the exhibit of Red Astrachan apple by Elias Wheeler; Dorchester blackberry by M. W. Chadbourne; Sneed peach by A. M. Clement; Greensboro Peach by G. V. Fletcher; Chenango apple by Charles F. Curtis; Carman peach by F. H. Evans; collection of peaches by David L. Fiske; Charbot and Abundance plum by E. L. Lewis; Alexander and Chenango apple by Edward E. Cole; Bartlett pear by Varnum Frost; and Clapp's Favorite pear by John Burnett.

These August exhibitions are among the most interesting of the fruit shows that we have, as there are many changes in the varieties of fruit during this month, but the committee believes, that

two exhibitions would cover all classes with, perhaps, the exception of blackberries. The new Japanese plum, Climax, was shown and promises well.

Owing to lack of room the Annual Exhibition did not do justice either to the committee or to the exhibitors; all classes were well filled and there were particularly large entries of Bosc, Bartlett, Louise Bonne de Jersey, Angouleme, Howell, and Seckel pears; Gravenstein, Hubbardston, and McIntosh apples; Concord, Worden, Niagara, and Delaware grapes; Japanese plums of many varieties; and Elberta peaches.

The display of grapes was one of the best ever seen at the Annual Exhibition. Joseph S. Chase had a very fine collection among which were Delaware, Herbert, Lindley, Massasoit, Niagara, Pocklington, Prentiss, Vergennes, Wilder, and Poughkeepsie Red. Edward R. Farrar showed splendid Niagara and Concord grapes, and H. R. Kinney, good Worden.

The competition in Bosc pears, of which there were eighteen entries, was very close, necessitating the weighing of specimens by the committee before awarding second and third prizes.

Bartlett, Seckel, and Anjou pears were very fine. W. G. Kendall had very fine Dana's Hovey, Bosc, and Seckel pears. John L. Bird also had a very good collection of pears. Charles F. Curtis exhibited excellent Bosc, Bartlett, Merriam, Hardy, and Clairgeau. Wm. Milman showed very fine Seckel and Paradise pears. George V. Fletcher had a good collection of fruit as well as fine specimens in many individual classes.

On the whole the pears were excellent and proved one of the most interesting parts of the exhibit.

Apples were not as numerous as was expected but the exhibit was very good. Some very fine Gravenstein were shown by G. L. Priest; McIntosh by Hittinger Fruit Co.; Porter by Wilfrid Wheeler; Hubbardston by C. M. Handley; and Washington Strawberry by A. E. Hartshorn. The committee would call attention to the very fine apples displayed by Edward E. Cole. We seldom see such good apples in all varieties as were shown by Mr. Cole.

Thos. W. Head had some very fine Black Hamburg, Black Alicante, Muscat of Alexandria, and Gros Colman hot-house

grapes which were awarded first prizes. The committee regrets that more room could not have been given to this exhibit of fruit in order to bring it more prominently before the Society.

One of the features of this exhibition was a collection of foreign and native species of Malus, Pyrus, and Vitis Fruits, exhibited by Jackson Dawson of the Arnold Arboretum, showing the wonderful evolution of our apples, pears, and grapes from their wild and primitive state to a condition of real worth and economic value. This exhibit was awarded a silver medal and the committee feels very grateful to Mr. Dawson for this interesting display.

The fruit was a welcome addition at the Chrysanthemum exhibition. Five large tables were filled with a splendid showing of apples, pears, quinces, and cranberries which, having plenty of room, were exhibited to great advantage. As usual apples and pears predominated, and the display was far better than was expected. There were twenty entries of Baldwin apples.

The Fameuse, Lady Sweet, Northern Spy, Tolman Sweet, and King from Edward E. Cole were very fine, as were also Bellflower, Hunt Russet, and Roxbury Russet from C. F. Boyden.

Pears were exceptionally good, Wm. H. Derby showing very fine Augouleme, Bosc, and Clairgeau; Mrs. C. C. Converse and Mrs. Lester Leland, large Anjou and Vicar; E. W. Wood, fine Comice and Dana's Hovey; W. G. Kendall, very excellent Dana's Hovey. Edward B. Wilder showed very fine Lawrence and Vicar, and Charles F. Curtis, fine Clairgeau. Quinces were a feature of the show and those exhibited by I. H. Locke were exceptionally good.

Cranberries sent by Henry J. Thayer were very good.

There have been nine exhibitions of fruit during the season, and in these nine exhibitions there were one hundred and ninety-five classes open to competition; of these one hundred and seventy-one were competed for. There were eight gratuities and one silver medal awarded.

The total amount of money appropriated for prizes in 1905 was $1275.00; of this $966.00 was awarded; leaving an unexpended balance of $294.00.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1905.

Rose and Strawberry Exhibition.

June 24 and 25.

Theodore Lyman Fund.

Strawberries.— Four quarts of any variety:
1st, G. V. Fletcher, Marshall, $15; 2d, Miss S. B. Fay, Marshall, $12; 3d, John Ward, Marshall, $10; 4th, A. W. Clark, Cardinal, $8.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:
1st, G. F. Wheeler, $15; 2d, I. E. Coburn, $10.
Ten baskets, not less than three varieties, two quarts each:
1st, G. F. Wheeler, $10; 2d, G. V. Fletcher, $8.
Five baskets of five varieties, one quart each:
1st, G. F. Wheeler, $6; 2d, S. H. Warren, $5; 3d, I. E. Coburn, $4.
Two quarts of Belmont:
1st, I. E. Coburn, $3; 2d, G. V. Fletcher, $2.
Brandywine:
1st, S. H. Warren, $3; 2d, G. F. Wheeler, $2; 3d, I. E. Coburn, $1.
Bubach:
1st, G. F. Wheeler, $3.
Clyde:
2d, G. F. Wheeler, $2.
Haverland:
1st, I. E. Coburn, $3; 3d, G. F. Wheeler, $1.
Jessie:
1st, I. E. Coburn, $3.
Marshall:
1st, G. V. Fletcher, $3; 2d, W. A. Blodgett, $2; 3d, John Ward, $1.
Minute Man:
1st, G. F. Wheeler, $3.
Nick Ohmer:
2d, G. F. Wheeler, $2.
Sample:
1st, G. V. Fletcher, $3; 2d, John Ward, $2; 3d, G. F. Wheeler, $1.
Any other variety:

1st, G. F. Wheeler, Granville, $3; 2d, A. W. Clark, Challenge, $2; 3d, G. F. Wheeler, Senator Dunlap, $1.

One quart of any new variety not previously exhibited:

1st, N. B. White, Seedling, $3; 2d, A. W. Clark, Cardinal, $2.

Cherries.— Two quarts of any variety:

1st, G. V. Fletcher, Guigne Noir, $3; 2d, J. H. Fletcher, Queen Ann, $2.

Foreign Grapes.— Two bunches of any variety:

1st, W. C. Winter, Black Hamburg, $5.

July 8 and 9.

Strawberries.— Two quarts of any variety:

1st, B. M. Smith, President, $3; 2d, B. M. Smith, Commonwealth, $2; 3d, B. M. Smith, North Shore, $1.

Cherries.— Two quarts of Black Eagle:

1st, C. B. Travis, $3; 2d, G. V. Fletcher, $2; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $1.

Black Tartarian:

1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, W. A. Green, $1.

Coe's Transparent:

1st, C. S. Smith, $3; 2d, J. L. Bird, $2.

Downer:

1st, C. S. Smith, $3; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $2.

Any other variety:

1st, C. S. Smith, Hyde's Seedling, $3; 2d, Miss Vera Chapell, Hovey, $2; 3d, C. F. Curtis, Yellow Spanish, $1.

Currants.— Two quarts of any Red variety:

1st, Mrs. C. C. Converse and Mrs. Lester Leland, Cherry, $3; 2d, W. J. Clemson, Versaillaise, $2; 3d, G. V. Fletcher, Versaillaise, $1.

Two quarts of any White variety:

1st, J. H. White, White Imperial, $3; 2d, G. V. Fletcher, White Grape, $2; 3d, E. L. Lewis, White Grape, $1.

Gratuities: —

W. H. Spooner, Kansas Blackcaps, $1.

E. E. Doran, Franconia Raspberries and Versaillaise Currants, $1.

July 22.

Raspberries.— Two quarts of any variety:

1st, Mrs. C. C. Converse and Mrs. Lester Leland, Cuthbert, $3; 2d, M. Hemenway, Cuthbert, $2; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, Columbia, $1.

Currants.— Two quarts of any Red variety:
1st, W. G. Kendall, Wilder, $3; 2d, G. V. Fletcher, Versaillaise, $2; 3d, D. L. Fiske, Red Cross, $1.
Two quarts of any White variety:
1st, H. R. Kinney, White Grape, $3; 2d, J. H. White, White Imperial, $2; 3d, W. G. Kendall, White Grape, $1.
Gooseberries.— Two quarts of any variety of American origin:
1st, W. G. Kendall, Bates, $3; 2d, J. S. Chase, Triumph, $2; 3d, F. H. Evans, Triumph, $1.
Two quarts of any variety of Foreign origin:
3d, J. S. Chase, Hero of the Nile, $1.

August 5.

Apples.— Red Astrachan:
1st, E. L. Wheeler, $3; 2d, W. C. Winter, $2; 3d, E. L. Lewis, $1.
Sweet Bough:
1st, G. V. Fletcher, $3; 2d, C. B. Travis, $2; 3d, Mrs. A. E. Underwood, $1.
Yellow Transparent:
1st, G. L. Brown, $3; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $2.
Any other variety:
1st, G. V. Fletcher, Williams, $3.
Pears.— Giffard:
1st, J. Burnett, $3; 2d, J. L. Bird, $2; 3d, W. C. Winter, $1.
Summer Doyenne:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $3; 2d, W. C. Winter, $2; 3d, Wilfrid Wheeler, $1.
Blackberries.— Two quarts of any variety:
1st, M. W. Chadbourne, Dorchester, $3; 2d, W. J. Clemson, Rathburn, $2.
Peaches.— Open culture, any variety:
1st, A. M. Clement, Sneed, $3; 2d, D. L. Fiske, Waterloo, $2.

Gratuity: —

Mrs. A. E. Monblo, Strawberry Raspberry, $1.

August 12.

Apples.— Oldenburg:
2d, W. P. Milner, $2; 3d, G. Nelsen, $1.
Any other variety:
1st, Hittinger Fruit Co., Williams, $3; 2d, E. L. Wheeler, Red Astrachan, $2; 3d, Wilfrid Wheeler, Williams, $1.

Pears.— Clapp's Favorite:
1st, John Burnett, $3; 2d, W. J. Clemson, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, Charles Scully, Giffard, $2; 2d, Hittinger Fruit Co., Giffard, $1.
Peaches.— Twelve specimens of outdoor culture:
1st, Hittinger Fruit Co., Matchless, $3; 2d, G. V. Fletcher, Greensboro, $2; 3d, D. L. Fiske, Greensboro, $1.
Blackberries.— Two quarts of any variety:
1st, W. J. Clemson, Rathburn, $3; 2d, M. W. Chadbourne, Dorchester, $2; 3d, Mrs. E. M. Gill, Wachusett, $1.
Plums.— Japanese, any variety:
1st, E. L. Lewis, Chabot, $3; 2d, E. L. Wheeler, Red June, $2; 3d, D. L. Fiske, Red June, $1.
Foreign Grapes.— Two bunches of any variety:
1st, W. C. Winter, Black Hamburg, $4.

Gratuity: —

S. H. Warren, Pan-American Strawberry, $1.

August 19.

Apples.— Chenango:
1st, C. F. Curtis, $3; 2d, G. L. Brown, $2.
Williams:
1st, Varnum Frost, $3; 2d, G. V. Fletcher, $2.
Any other variety:
1st, W. F. Low, Oldenburg, $3; 2d, Aaron Low, Oldenburg, $2; 3d, W. Heustis & Son, Gravenstein, $1.
Pears.— Rostiezer:
1st, John Burnett, $3; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $2.
Tyson:
1st, J. L. Bird, $3.
Any other variety:
1st, M. W. Chadbourne, Bartlett, $3; 2d, M. W. Chadbourne, Clapp's Favorite, $2; 3d, J. L. Bird, Clapp's Favorite, $1.
Peaches.— Any variety:
1st, G. V. Fletcher, Greensboro, $3; 2d, D. L. Fiske, Greensboro, $2; 3d, D. L. Fiske, Triumph, $1.
Plums, Japanese.— Abundance:
1st, E. L. Lewis, $3; 2d, O. B. Kenrick, $2; 3d, A. M. Clement, $1.
Burbank:
1st, M. Hemenway, $3.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3; 2d, W. P. Hutchinson, Red June, $2; 3d, B. P. Ware, Red June, $1.

Gratuity: —

M. W. Chadbourne, Dorchester Blackberries, $1.

August 26.

Apples.— Gravenstein:
1st, E. E. Cole, $3; 2d, O. B. Kenrick, $2; 3d, H. A. Clark, $1.
Porter:
1st, Wilfrid Wheeler, $3; 2d, W. Heustis & Son, $2; 3d, Leonard Morton, $1.
Williams:
1st, H. A. Clark, $3; 2d, Varnum Frost, $2; 3d, Wilfrid Wheeler, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, E. E. Cole, Chenango, $2; 3d, W. F. Low, Oldenburg, $1.
Pears.— Bartlett:
1st, Varnum Frost, $3; 2d, John Burnett, $2; 3d, John Mahan, $1.
Any other variety:
1st, G. V. Fletcher, Clapp's Favorite, $3; 2d, W. J. Clemson, Clapp's Favorite, $2; 3d, J. L. Bird, Tyson, $1.
Peaches.— Collection, not less than three varieties:
1st, D. L. Fiske, $4.
Single dish, of any variety:
1st, F. H. Evans, Carman, $3; 2d, G. V. Fletcher, Greensboro, $2; 3d, D. L. Fiske, Mamie Ross, $1.
Plums.— Any variety:
1st, E. B. Parker, Climax, $3; 2d, O. B. Kenrick, Bradshaw, $2; 3d, E. B. Parker, Shiro, $1.

Gratuity: —

M. W. Chadbourne, Dorchester Blackberries, $1.

Annual Exhibition.

September 14, 15, 16, 17.

Theodore Lyman Fund.

Apples.— Fletcher Russet:
1st, C. M. Handley, $3; 2d, W. H. Teele, $2; 3d, G. V. Fletcher, $1.
Pound Sweet:
1st, G. V. Fletcher, $3.
Washington Royal or Palmer:
1st, A. E. Hartshorn, $3.

Any other variety:
1st, E. E. Cole, Chenango, $3; 2d, L. F. Priest, Rolfe, $2; 3d, E. E. Cole, Alexander, $1.

Samuel Appleton Fund.

Apples.— Baldwin:
1st, G. V. Fletcher, $3; 2d, E. E. Cole, $2; 3d, A. E. Hartshorn, $1.
Hubbardston:
1st, C. M. Handley, $3; 2d, W. H. Teele, $2; 3d, G. F. Wheeler, $1.
Pears.— Bosc:
1st, W. G. Kendall, $3; 2d, Wilfrid Wheeler, $2; 3d, C. F. Curtis, $1.
Sheldon:
1st, G. E. Freeman, $3; 2d, C. W. Libby, $2; 3d, W. G. Kendall, $1.

Benjamin V. French Fund.

Apples.— Gravenstein:
1st, L. F. Priest, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, E. E. Cole, $1.
Rhode Island Greening:
1st, A. E. Hartshorn, $3; 2d, G. V. Fletcher, $2; 3d, E. E. Cole, $1.

Marshall P. Wilder Fund.

Pears.— Anjou:
1st, G. V. Fletcher $3; 2d, H. A. Clark, $2; 3d, F. W. Damon, $1.
Bartlett:
1st, C. F. Curtis, $3; 2d, W. H. Derby, $2; 3d, G. V. Fletcher, $1.
Grapes.— Concord, twelve bunches:
1st, E. R. Farrar, $3; 2d, H. R. Kinney, $2; 3d, J. S. Chase, $1.
Worden:
1st, H. R. Kinney, $3.

Society's Prizes.

Collection of twelve varieties of Fruit, outdoor culture, not more than three varieties each of Apples, Pears, and Grapes admissible, the same number of specimens to be staged of each variety as in the individual named classes, decorative arrangement to be considered.
1st, G. V. Fletcher, $15.
Apples.— Fall Orange or Holden:
1st, H. R. Kinney, $3; 2d, C. M. Handley, $2; 3d, W. A. Green, $1.
Foundling:
1st, C. M. Handley, $3.
McIntosh:
1st, Hittinger Fruit Co., $3; 2d, Wilfrid Wheeler, $2; 3d, C. M. Handley, $1.

Maiden Blush:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $3; 2d, H. R. Kinney, $2; 3d, W. G. Kendall, $1.
Mother:
1st, O. B. Hadwen, $3; 2d, H. R. Kinney, $2.
Porter:
1st, Wilfrid Wheeler, $3; 2d, C. M. Handley, $2.
Sutton:
1st, H. A. Clark, $3; 2d, O. B. Hadwen, $2.
Washington Strawberry:
1st, A. E. Hartshorn, $3.
Wealthy:
1st, L. F. Priest, $3; 2d, O. B. Kenrick, $2; 3d, L. H. Browning, $1.

Crab Apples.— Hyslop; twenty-four specimens:
1st, A. E. Hartshorn, $3; 2d, W. H. Teele, $2.
Any other variety:
1st, W. A. Green, Transcendent, $2.

Pears.— Angouleme:
1st, W. H. Derby, $3; 2d, J. L. Bird, $2; 3d, F. W. Damon, $1.
Clairgeau:
1st, W. H. Derby, $3; 2d, F. W. Damon, $2; 3d, C. F. Curtis, $1.
Comice:
1st, J. L. Bird, $3.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, G. V. Fletcher, $2; 3d, W. Heustis & Son, $1.
Diel:
1st, F. W. Damon, $3; 2d, J. L. Bird, $2; 3d, E. B. Wilder, $1.
Fulton:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $3; 2d, C. F. Curtis, $2; 3d, J. L. Bird, $1.
Hardy:
1st, C. F. Curtis, $3; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $2.
Howell:
1st, W. A. Green, $3.
Josephine of Malines:
1st, J. B. Shurtleff, Jr., $3; 2d, J. L. Bird, $2.
Lawrence:
1st, F. W. Damon, $3; 2d, J. L. Bird, $2; 3d, Wilfrid Wheeler, $1.
Louise Bonne of Jersey:
1st, J. L. Bird, $3; 2d, Hittinger Fruit Co., $2; 3d, E. B. Wilder, $1.
Marie Louise:
2d, F. W. Damon, $2.
Merriam:
1st, Hittinger Fruit Co., $3; 2d, C. F. Curtis, $2; 3d, J. L. Bird, $1.

Onondaga:
1st, J. L. Bird, $3; 2d, C. B. Travis, $2; 3d, Mrs. C. C. Converse and Mrs. Lester Leland, $1.
Paradise of Autumn:
1st, William Milman, $3; 2d, E. B. Wilder, $2.
Seckel:
1st, William Milman, $3; 2d, W. G. Kendall, $2; 3d, E. R. Teele, $1.
Souvenir du Congres:
1st, S. L. Howe, $3; 2d, W. G. Kendall, $2; 3d, C. F. Curtis, $1.
Superfin:
1st, E. B. Wilder, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Urbaniste:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $3; 2d, W. G. Kendall, $2; 3d, C. F. Curtis, $1.
Any other variety:
1st, Hittinger Fruit Co., Bartlett, $3; 2d, D. H. Locke, Bartlett, $2; 3d, F. H. Evans, Flemish Beauty, $1.

Quinces.— Any variety:
1st, G. V. Fletcher, Orange, $3; 2d, G. G. Barker, Orange, $2.

Peaches.— Coolidge's Favorite:
1st, G. V. Fletcher, $3.
Crawford's Early:
1st, H. A. Clark, $3; 2d, D. L. Fiske, $2; 3d, S. H. Warren, $1.
Crosby:
2d, D. L. Fiske, $2.
Foster:
1st, J. L. Bird, $3.
Oldmixon Freestone:
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Stump the World:
1st, S. H. Warren, $3; 2d, D. L. Fiske, $2.
Any other variety:
1st, D. L. Fiske, Elberta, $3; 2d, W. Heustis & Son, Elberta, $2; 3d, Hittinger Fruit Co., Elberta, $1.

Plums.— Coe's Golden Drop:
1st, Elliott Moore, $3; 2d, Charles Scully, $2.
Imperial Gage:
1st, Elliott Moore, $3.
Lombard:
1st, W. P. Hutchinson, $3; 2d, Elliott Moore, $2; 3d, H. R. Kinney, $1.
Reine Claude de Bavay:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $2; 2d, Elliott Moore, $1.
Yellow Egg:
1st, G. V. Fletcher, $2.

Any other variety:
1st, Elliott Moore, Pond's Seedling, $3; 2d, H. R. Kinney, Shipper's Pride, $2; 3d, W. P. Hutchinson, Grand Duke, $1.

Japanese Plums.— Any variety:
1st, D. L. Fiske, Wickson, $3; 2d, W. P. Hutchinson, Chabot, $2; 3d, E. L. Lewis, Wickson, $1.

Foreign Grapes.— Two bunches of Black Alicante:
1st, T. W. Head, $5.

Two bunches of any other Black variety:
1st, T. W. Head, Black Hamburg, $5.

Two bunches of Muscat of Alexandria:
1st, T. W. Head, $5.

Native Grapes.— Six bunches of Brighton:
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2; 3d, C. W. Libby, $1.

Campbell's Early:
1st, Linus Darling, $3.

Delaware:
1st, J. S. Chase, $3; 2d, W. G. Kendall, $2; 3d, W. J. Clemson, $1.

Green Mountain:
1st, W. G. Kendall, $3; 2d, E. L. Lewis, $2.

Herbert:
1st, C. W. Libby, $3; 2d, J. S. Chase, $2.

Lindley:
1st, J. S. Chase, $3; 2d, C. W. Libby, $2.

Massasoit:
1st, J. S. Chase, $3.

Moore's Early:
1st, E. L. Lewis, $3; 2d, F. W. Damon, $2; 3d, G. V. Fletcher, $1.

Niagara:
1st, E. R. Farrar, $3; 2d, J. S. Chase, $2; 3d, H. A. Clark, $1.

Pocklington:
1st, H. R. Kinney, $3; 2d, J. S. Chase, $2; 3d, S. H. Warren, $1.

Prentiss:
1st, J. S. Chase, $3; 2d, F. W. Damon, $2.

Vergennes:
1st, J. S. Chase, $3.

Wilder:
1st, J. S. Chase, $3.

Any other variety:
1st, J. S. Chase, Poughkeepsie Red, $3; 2d, E. L. Lewis, Eaton, $2; 3d, C. W. Libby, Moore's Diamond, $1.

Gratuities: —

Hittinger Fruit Co., Fruit Display, $3.
M. W. Chadbourne, " " $1.

Jackson Dawson, Collection of foreign and native species of Malus, Pyrus, and Vitis Fruits, a Silver Medal.

Chrysanthemum Show.

November 9, 10, 11, 12.

Benjamin V. French Fund.

Apples.— Baldwin:
1st, Miss A. M. Whiting, $3; 2d, Mrs. J. L. Whiting, $2; 3d, J. Bauernfeind, $1.
Rhode Island Greening:
1st, Mrs. A. E. Underwood, $3; 2d, A. E. Hartshorn, $2; 3d, E. M. Bruce, $1.

Society's Prizes.

Apples.— Danvers Sweet:
1st, Rev. T. L. Dean, $3; 2d, B. P. Ware, $2.
Fameuse:
1st, E. E. Cole, $3.
Hunt Russet:
1st, C. F. Boyden, $3; 2d, W. H. Teele, $2; 3d, G. F. Wheeler, $1.
Jacobs Sweet:
1st, B. P. Ware, $3.
Lady Sweet:
1st, E. E. Cole, $3.
McIntosh:
1st, C. C. Shaw, $3; 2d, C. M. Handley, $2; 3d, G. V. Fletcher, $1.
Northern Spy:
1st, E. E. Cole, $3; 2d, C. F. Boyden, $2; 3d, A. E. Hartshorn, $1.
Roxbury Russet:
1st, C. F. Boyden, $3; 2d, E. M. Bruce, $2; 3d, A. M. Knowlton, $1.
Tolman Sweet:
1st, E. E. Cole, $3; 2d, C. F. Boyden, $2; 3d, Mrs. A. E. Underwood, $1.
Tompkins King:
1st, H. A. Stevens Co., $3; 2d, E. E. Cole, $2; 3d, C. C. Shaw, $1.
Any other variety:
1st, C. F. Boyden, Bellflower, $3; 2d, Mrs. Chapman, New York Pippin, $2; 3d, M. Hemenway, Fallawater, $1.
Pears.— Angouleme:
1st, W. H. Derby, $3; 2d, F. W. Damon, $2.

Anjou:
1st, Mrs. C. C. Converse and Mrs. Lester Leland, $3; 2d, William Milman, $2; 3d, J. Bauernfeind, $1.
Bosc:
1st, C. B. Travis, $3; 2d, W. H. Derby, $2; 3d, G. V. Fletcher, $1.
Clairgeau:
1st, C. F. Curtis, $3; 2d, W. H. Derby, $2; 3d, F. W. Damon, $1.
Comice:
1st, E. W. Wood, $3; 2d, J. L. Bird, $2; 3d, G. V. Fletcher, $1.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, E. W. Wood, $2; 3d, F. W. Damon, $1.
Diel:
1st, F. W. Damon, $3; 2d, C. E. Swain, $2.
Josephine of Malines:
1st, J. L. Bird, $3; 2d, J. B. Shurtleff, Jr., $2.
Lawrence:
1st, E. B. Wilder, $3; 2d, J. Bauernfeind, $2; 3d, Mrs. Nicholson, $1.
Vicar:
1st, E. B. Wilder, $3; 2d, Mrs. C. C. Converse and Mrs. Lester Leland, $2; 3d, Mrs. Blackbird, $1.
Any other variety:
1st, C. E. Swain, Marie Louise, $3; 2d, William Milman, Mount Vernon, $2; 3d, J. L. Bird, Kingsessing, $1.

QUINCES.— Any variety:
1st, I. H. Locke, Apple, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. L. Bird, Orange, $1.

CRANBERRIES.— Half-peck:
1st, H. J. Thayer, Mathews, $3; 2d, H. J. Thayer, McFarlins, $2; 3d, R. A. Everson, Hockanums, $1.

WILFRID WHEELER,
CHARLES F. CURTIS,
J. WILLARD HILL,
} *Committee on Fruits.*

REPORT OF THE COMMITTEE ON VEGETABLES FOR THE YEAR 1905.

BY WARREN W. RAWSON, CHAIRMAN.

Your committee has been greatly pleased and encouraged the past season by the renewal of interest that has been shown in the vegetable department, thereby raising the exhibitions to a much higher standard than in former years. The reduction in the amount appropriated for premiums some two or three years ago was a very discouraging feature and it has been hard to overcome it, but, by the earnest effort of your committee and by the encouragement for the future that we now have, we think this department will advance to be what it has never been before, one of the leading ones of this Society.

The object of the Society is to advance horticulture, agriculture, and floriculture in the State of Massachusetts. It is not to try to advance more in one department than in another nor to show any more favors to one than to another, but to try to advance them all by making such appropriations for premiums as will in every case help to obtain the desired result.

The agriculture of Massachusetts has increased nearly 50 per cent in the last fifteen years due largely to the great advancement that has been made in the vegetable or market gardening department. When Massachusetts stands at the head in the amount of production of vegetables per acre of all the states in the Union and also for the best quality produced, why should not the exhibits at our exhibitions be up to the standard, and why should not this Society share in the advance that has been made in this direction? When the vegetable products of the state equal more in value than her fruits, plants and flowers combined why is not this department worthy of the first and best consideration, especially when we consider that by far the greater part of the vegetables produced in the state are grown in the vicinity of Boston?

With the use of glass it has been found that plants and flowers can be brought to perfection and so the vegetable growers have found that with glass a perfect crop can be produced. Within the past ten years at least 100 houses have been built each year in this state and by the use of this glass a great deal has been accomplished. Many varieties have been improved and some new ones added.

Much can be done by the Massachusetts Horticultural Society in having these products displayed, and some inducements must be made to the growers to get them to show their goods at our exhibitions.

Your committee will do all in its power to bring this about and we are willing to take hold and assist all other departments in order to bring this Society up to where it belongs, the foremost in the land for the quality of its exhibitions.

We believe in offering good prizes, not a large number of them, but of sufficient size to enable the exhibitor to make a creditable display. We find that the past year many collections have been exhibited which were very creditable to the Society and also to the exhibitor. We think more attention should be given in this direction and in our next schedule you will find that we have done so.

Some changes have been made in the time of the exhibitions with an idea of holding the shows at a time when the special crops are in their prime or in season. We have also lessened the number of exhibitions by one. We offered for premiums the past year in our schedule about $960.00. The Society gave us $900.00 and we have awarded $857.00 or $43.00 less than the appropriation.

For the coming year by the earnest effort of your committee we have obtained the amount of $1200.00 for which we are very grateful, and we will do our best to make the vegetable exhibitions equal to those of any other department of the Society, always bearing in mind that, as Massachusetts in the production of vegetables stands first in the land, so shall the Massachusetts Horticultural Society stand in the character of its exhibitions.

It is with sincere regret that we have to record in this report the death of a member of our committee, Joshua C. Stone, who died at his home in Watertown, October 2, 1905, at the age of 70 years.

He was one of the most widely known and respected market

gardeners in New England and had been closely identified with the vegetable interests of the Society since his election as a member in 1894.

He was a member of the Boston Market Gardeners' Association ever since its foundation in 1886 and will always be remembered by the members of that organization as one of its most enthusiastic members in everything tending to the best interests of that society.

He had served as a member of the Vegetable Committee of the Massachusetts Horticultural Society for the past six years and was ever a help to his fellow members; his wide experience and geniality making it a pleasure to serve with him.

In his business relations he was always the soul of honor and may his life always serve as an example to the members of this Society. It is by the influence of such men as he that the market garden business of today stands on so high a plane.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1905.

February 11.

Salsify.— Twelve specimens:
1st, Ed. Parker, $3; 2d, A. E. Hartshorn, $2.

Radishes.— Four bunches:
1st, W. W. Rawson, $3; 2d, A. E. Hartshorn, $2; 3d, Hittinger Fruit Co., $1.

Cucumbers.— Pair of any variety:
1st, Walter Warburton, $3.

Cauliflowers.— Four specimens:
1st, F. E. Coolidge, $3; 2d, C. M. Handley, $2; 3d, W. H. Teele, $1.

Celery.— Four roots:
1st, Ed. Parker, $3; 2d, W. Heustis & Son, $2; 3d, W. Heustis & Son, $1.

Lettuce.— Four heads:
1st, W. W. Rawson, $3; 2d, W. W. Rawson, $2; 3d, G. D. Moore, $1.

Mushrooms.— Twenty-four specimens:
1st, H. A. Stevens Co., $3.

Parsley.— Two quarts.
1st, Hittinger Fruit Co., $2; 2d, Walter Warburton, $1.

Tomatoes.— Twelve specimens:
1st, E. A. Clark, $3.

Gratuities: —

Mrs. A. W. Blake, Rhubarb, $1.
Ed. Parker, Collection, $1.

Spring Exhibition.

March 23, 24, 25, 26.

William J. Walker Fund.

Radishes.— Four bunches of Turnip Rooted:
1st, Arthur Nixon, $3; 2d, A. E. Hartshorn, $2; 3d, W. W. Rawson, $1.
Cucumbers.— Pair:
1st, W. W. Rawson, $3; 2d, Walter Warburton, $2.
Dandelions.— Peck:
1st, A. E. Hartshorn, $3.
Lettuce.— Four heads:
1st, W. W. Rawson, $3; 2d, Hittinger Fruit Co., $2; 3d, W. E. Lenk, $1.
Rhubarb.— Twelve stalks:
1st, H. R. Kinney, $3.
Mushrooms.— Twelve specimens:
1st, H. R. Kinney, $3; 2d, A. W. Crockford, $2; 3d, H. A. Stevens Co., $1.
Parsley.— Four quarts:
1st, Hittinger Fruit Co., $3; 2d, W. E. Lenk, $2.

Gratuity: —

M. W. Chadbourne, Artichokes, $1.

April 29.

William J. Walker Fund.

Asparagus.— Four bunches, twelve stalks each:
1st, Ed. Parker, $3.
Cucumbers.— Pair of White Spine:
1st, C. H. Metcalf, $3; 2d, Varnum Frost, $2; 3d, W. W. Rawson, $1.
Any other variety:
1st, E. M. Bruce, $3.
Spinach.— Peck:
1st, Aaron Low, Thick Leaf, $3; 2d, Aaron Low, Victoria, $2; 3d, A. E. Hartshorn, $1.

Dandelions.— Peck:
1st, J. B. Shurtleff, Jr., $3; 2d, Hittinger Fruit Co., $2; 3d, A. E. Hartshorn, $1.
Rhubarb.— Twelve stalks, open culture:
1st, Hittinger Fruit Co., $3; 2d, J. C. Stone, $2; 3d, Ed. Parker, $1.
Lettuce.— Four heads:
1st, Hittinger Fruit Co., $3; 2d, W. W. Rawson, $2; 3d, W. W. Rawson, $1.
Radishes.— Four bunches:
1st, Hittinger Fruit Co., $2; 2d, Ed. Parker, $1.

Gratuity: —

Ed. Parker, Celery and Salsify, $1.

Rhododendron Exhibition.

June 3 and 4.

Theodore Lyman Fund.

Beets.— Twelve specimens:
1st, J. C. Stone, $3.
Radishes.— Four bunches:
1st, A. E. Hartshorn, $3; 2d, Ed. Parker, $2.
Asparagus.— Four bunches, twelve stalks each:
1st, Ed. Parker, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.
Cucumbers.— Pair:
1st, G. D. Moore, $3; 2d, Walter Warburton, $2.
Lettuce.— Four heads:
1st, G. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, Walter Warburton, $1.
Rhubarb.— Twelve stalks, open culture:
1st, J. B. Shurtleff, Jr., $3; 2d, Ed. Parker, $2; 3d, A. E. Hartshorn, $1.
Spinach.— Peck:
1st, W. J. Clemson, $2; 2d, G. D. Moore, $1.
Collection of Vegetables, not less than four varieties, decorative arrangement to be considered:
1st, W. J. Clemson, $5; 2d, Ed. Parker, $3.

Rose and Strawberry Exhibition.

June 24 and 25.

Beets.— Twelve Turnip Rooted, open culture:
1st, W. W. Rawson, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.

Onions.— Twelve specimens:
1st, W. W. Rawson, $3; 2d, J. J. Lyons, $2; 3d, Ed. Parker, $1.
Cucumbers.— Four specimens:
1st, G. D. Moore, $3; 2d, W. W. Rawson, $2; 3d, Ed. Parker, $1.
Lettuce.— Four heads:
1st, E. L. Lewis, Deacon, $3; 2d, W. W. Rawson, Black Seed, $2; 3d, E. L. Lewis, Immensity, $1.
Peas.— Half-peck, any variety:
1st, E. L. Lewis, $3; 2d, William Whitman, $2; 3d, I. E. Coburn, $1.
Carrots.— Four bunches:
1st, A. E. Hartshorn, $3; 2d, W. W. Rawson, $2.
Cabbages.— Four specimens:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, W. Heustis & Son, $1.
Collection of Vegetables, not less than six varieties, decorative arrangement to be considered:
1st, W. W. Rawson, $5; 2d, E. L. Lewis, $4; 3d, W. J. Clemson, $3.

July 8 and 9.

Onions.— Twelve specimens:
1st, Ed. Parker, $3; 2d, W. W. Rawson, $2; 3d, J. J. Lyons, $1.
Squashes.— Summer, Long Warted, four specimens:
1st, A. E. Hartshorn, $3.
Cabbages.— Four specimens:
1st, G. D. Moore, $3; 2d, W. W. Rawson, $2; 3d, W. Heustis & Son, $1.
Beans.— Half-peck of Wax:
1st, W. W. Rawson, $3; 2d, Ed. Parker, $2; 3d, W. J. Clemson, $1.
Half-peck of Green:
1st, G. D. Moore, $3; 2d, W. W. Rawson, $2; 3d, A. E. Hartshorn, $1.
Peas.— Half-peck, late varieties:
1st, E. L. Lewis, $3; 2d, Joseph Thorpe, Gradus, $2; 3d, Joseph Thorpe, Alderman, $1.
Lettuce.— Four heads:
1st, W. W. Rawson, $3; 2d, Joseph Thorpe, $2; 3d, E. L. Lewis, $1.
Beets.— Twelve specimens:
1st, W. W. Rawson, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
Cucumbers.— Four specimens:
1st, G. D. Moore, $3; 2d, W. W. Rawson, $2; 3d, B. Lincoln, $1.
Collection of Vegetables, not less than six varieties, decorative arrangement to be considered:
1st, W. W. Rawson, $5; 2d, W. J. Clemson, $4.

July 22.

Lettuce.— Four heads:
1st, Joseph Thorpe, Standwell, $2; 2d, E. L. Lewis, New York, $1.

Beans.— Four quarts, any variety:
1st, Ed. Parker, Wardwell's Kidney Wax, $3; 2d, Mrs. L. M. Towle, Horticultural Wax, $2; 3d, E. L. Lewis, Stringless Greenpod, $1.
Peas.— Four quarts, any variety:
1st, E. L. Lewis, Improved Stratagem, $3; 2d, Joseph Thorpe, Exhibition, $2; 3d, E. L. Lewis, Carter's Daisy, $1.
Sweet Corn.— Twelve ears, any variety:
1st, G. D. Moore, Crosby's Early, $3; 2d, E. L. Lewis, Cory, $2; 3d, Walter Warburton, Cory's Early, $1.
Onions.— Twelve specimens, any variety:
1st, Ed. Parker, Silverskin, $3; 2d, Ed. Parker, White Portugal, $2; 3d, E. L. Lewis, Silverskin, $1.
Tomatoes.— Twelve specimens, open culture:
1st, Joseph Thorpe, Earliana, $3; 2d, Walter Warburton, Earliana, $2; 3d, Joseph Thorpe, Early Jewell, $1.

August 5.

Squashes.— Marrow, three specimens:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
Cabbages.— Four specimens:
1st, W. Heustis & Son, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
Beans.— Horticultural, four quarts in pod:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
Sweet Corn.— Twelve ears:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, Joseph Thorpe, $1.
Tomatoes.— Twelve specimens:
1st, W. J. Clemson, $3; 2d, W. Heustis & Son, $2; 3d, Joseph Thorpe, $1.
Onions.— Twelve specimens, dry:
1st, E. L. Lewis, Danvers, $3; 2d, E. L. Lewis, Prize Taker, $2; 3d, E. L. Lewis, White, $1.
Carrots.— Twelve specimens:
1st, E. L. Lewis, $2; 2d, J. J. Lyons, $1.

August 12.

Carrots.— Twelve specimens:
1st, E. L. Lewis, Chantenay, $3; 2d, Ed. Parker, Half-long, $2; 3d, E. L. Lewis, Intermediate, $1.
Endive.— Four specimens:
1st, W. J. Clemson, De Ruffec, $3; 2d, W. J. Clemson, Batavian, $2; 3d, W. J. Clemson, White Curled, $1.
Sweet Corn.— Twelve ears:
1st, A. E. Hartshorn, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.

Egg Plants.— Four specimens:
1st, Ed. Parker, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.
Tomatoes.— Twelve specimens:
1st, W. J. Clemson, $3; 2d, Walter Warburton, $2; 3d, Ed. Parker, $1.
Onions.— Twelve specimens, dry:
1st, J. J. Lyons, $3; 2d, Walter Warburton, $2; 3d, E. L. Lewis, $1.
Squashes.— Marrow:
1st, W. Heustis & Son, $3; 2d, A. E. Hartshorn, $2; 3d, P. Hurley, $1.

Gratuity: —

J. J. Lyons, Carrots, $1.

August 19.

Potatoes.— Twelve specimens of any variety:
1st, E. L. Lewis, Early Northern, $3; 2d, Mrs. J. L. Gardner, Beauty, $2; 3d, E. L. Lewis, Hebron, $1.
Onions.— Twelve specimens:
1st, E. L. Lewis, Danvers, $3; 2d, G. D. Moore, Danvers, $2; 3d, E. L. Lewis, Prize Taker, $1.
Celery.— Four roots, any variety:
1st, Joseph Thorpe, $3; 2d, P. Hurley, $2; 3d, E. L. Lewis, $1.
Lettuce.— Four heads:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Deacon, $2.
Beans.— Two quarts, shelled:
1st, E. L. Lewis, $3; 2d, Joseph Thorpe, $2; 3d, A. E. Hartshorn, $1.
Sweet Corn.— Twelve ears of any variety:
1st, Ed. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
Tomatoes.— Twelve specimens:
1st, Joseph Thorpe, Jewell, $3; 2d, Joseph Thorpe, Earliana, $2; 3d, Wilfrid Wheeler, Stone, $1.
Peppers.— Twelve specimens:
1st, Ed. Parker, Chinese Giant, $3; 2d, E. L. Lewis, Chinese Giant, $2; 3d, Ed. Parker, Ruby King, $1.
Collection of Vegetables, not less than four varieties, decorative arrangement to be considered:
1st, E. L. Lewis, $5.

August 26.

Melons.— Four specimens:
1st, E. L. Lewis, Montreal, $3; 2d, E. L. Lewis, Rocky Ford, $2; 3d, Ed. Parker, Emerald Gem, $1.
Cabbages.— Three of any variety, trimmed:
1st, Ed. Parker, $3; 2d, A. E. Hartshorn, $1.
Celery.— Four roots:
1st, Ed. Parker, $3; 2d, P. Hurley, $2; 3d, Joseph Thorpe, $1.

Beans.— Two quarts of Lima:

1st, W. J. Clemson, Burpee's $3; 2d, W. J. Clemson, Dreer's, $2; 3d, A. E. Hartshorn, $1.

Native Mushrooms.— Named collection of not less than five edible varieties:

1st, S. S. Crosby, $3; 2d, Boston Mycological Club, $2.

Tomatoes.— Twelve specimens:

1st, Arthur Nixon, $3; 2d, W. J. Clemson, $2; 3d, Joseph Thorpe, $1.

Onions.— Twelve specimens:

1st, E. L. Lewis, Danvers, $3; 2d, G. D. Moore, Prize Taker, $2; 3d, E. L. Lewis, Prize Taker, $1.

Squashes:

1st, Ed. Parker, Marrow, $3; 2d, W. Heustis & Son, Marrow, $2; 3d, A. E. Hartshorn, $1.

Collection of Vegetables, not less than four varieties, decorative arrangement to be considered:

1st, Ed. Parker, $5; 2d, E. L. Lewis, $3.

Annual Exhibition.

September 14, 15, 16, 17.

Carrots.— Twelve Long Orange:

1st, Ed. Parker, $3; 2d, E. L. Lewis, $2; 3d, H. R. Kinney, $1.

Twelve Intermediate:

1st, H. R. Kinney, $3; 2d, Charles Scully, $2; 3d, Ed. Parker, $1.

Potatoes.— Twelve Hebron:

1st, H. R. Kinney, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.

Twelve Rose:

1st, E. L. Lewis, $3.

Twelve of any other variety:

1st, H. R. Kinney, Somerset, $3; 2d, W. J. Clemson, Delaware, $2; 3d, J. G. Junier, $1.

Salsify.— Twelve specimens:

1st, P. Hurley, $3; 2d, Ed. Parker, $2; 3d, W. J. Clemson, $1.

Turnips.— Twelve Flat:

1st, E. L. Lewis, $3; 2d, G. F. Wheeler, $2; 3d, T. W. Head, $1.

Twelve Swedish:

1st, Charles Scully, $3; 2d, Ed. Parker, $2; 3d, Joseph Thorpe, $1.

Onions.— Twelve Danvers:

1st, E. L. Lewis, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, A. E. Hartshorn, $1.

Twelve Red:

1st, E. L. Lewis, $3; 2d, Ed. Parker, $2; 3d, A. E. Hartshorn, $1.

Twelve White:
1st, E. L. Lewis, $2; 2d, Ed. Parker, $1.

Squashes.— Three Bay State:
1st, E. L. Lewis, $3; 2d, G. F. Wheeler, $2; 3d, A. E. Hartshorn, $1.
Three Hubbard:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, G. F. Wheeler, $1.
Three Hybrid Turban:
1st, E. L. Lewis, $3; 2d, G. F. Wheeler, $2; 3d, A. E. Hartshorn, $1.
Three Marrow:
1st, E. L. Lewis, $3; 2d, Ed. Parker, $2; 3d, W. Heustis & Son, $1.

Cucumbers.— Pair of White Spine:
1st, H. A. Vickery, $4; 2d, A. E. Hartshorn, $3; 3d, W. J. Clemson, $2.
Pair of any other variety:
1st, A. E. Hartshorn, $3; 2d, Joseph Thorpe, $2.

Melons.— Four specimens:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

Watermelons.— Two specimens:
1st, Ed. Parker, $3; 2d, Ed. Parker, $2; 3d, Joseph Thorpe, $1.

Brussels Sprouts.— Half-peck:
1st, A. E. Hartshorn, $3; 2d, W. J. Clemson, $2; 3d, T. W. Head, $1.

Cabbages.— Three Drumhead, trimmed:
1st, A. E. Hartshorn, $3; 2d, T. W. Head, $2; 3d, Ed. Parker, $1.
Three Savoy, trimmed:
1st, A. E. Hartshorn, $3; 2d, Ed. Parker, $2; 3d, T. W. Head, $1.

Cauliflowers.— Four specimens:
1st, W. H. Teele, $4; 2d, DeSouza Bros., $3; 3d, C. M. Handley Estate, $2.

Celery.— Best kept during the exhibition, four roots of Paris Golden:
1st, E. L. Lewis, $5; 2d, W. Heustis & Son, $3; 3d, P. Hurley, $2.
Any other variety:
1st, Arthur Nixon, $5; 2d, Joseph Thorpe, $3; 3d, A. E. Hartshorn, $2.

Endive.— Four specimens:
1st, Vincent Buitta, $3; 2d, Vincent Buitta, $2; 3d, Vincent Buitta, $1.

Lettuce.— Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, T. W. Head, $1.

Parsley.— Two quarts:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.

Sweet Corn.— Twelve ears:
1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.

Egg Plants.— Four Round Purple:
1st, A. E. Hartshorn, $3; 2d, Mrs C. C. Converse and Mrs. Lester Leland, $2; 3d, Ed. Parker, $1.

Tomatoes.— Twelve Aristocrat:
1st, Ed. Parker, $3; 2d, Joseph Thorpe, $2; 3d, W. J. Clemson, $1.

Twelve Stone:
1st, Joseph Thorpe, $3; 2d, E. L. Lewis, $2; 3d, Ed. Parker, $1.
Twelve of any other variety:
1st, Mrs. E. M. Gill, $3; 2d, E. L. Lewis, $2; 3d, Elliott Moore, $1.
Peppers.— Twelve specimens of Squash:
1st, E. L. Lewis, $3; 2d, H. R. Kinney, $2; 3d, Ed. Parker, $1.
Any other variety:
1st, E. L. Lewis, $3; 2d, Ed. Parker, $2; 3d, J. B. Shurtleff, Jr., $1.
Culinary Herbs, Green.— Collection, named:
1st, Arthur Nixon, $3; 2d, Ed. Parker, $2.
Collection of Vegetables, not less than ten varieties, decorative arrangement to be considered:
1st, E. L. Lewis, $10; 2d, Vincent Buitta, $8; 3d, Ed. Parker, $5.

Gratuities: —

J. J. H. Gregory, Potatoes, $1.
W. W. Rawson, Collection, $3.

Chrysanthemum Show.

November 9, 10, 11, 12.

Special Prizes.

Celery.— Eight roots, commercial grown:
1st, Ed. Parker, a Silver Medal; 2d, E. L. Lewis, a Bronze Medal.

Regular Prizes.

Parsnips.— Twelve specimens of Long Smooth:
1st, W. J. Clemson, $3; 2d, W. H. Teele, $2; 3d, A. E. Hartshorn, $1.
Twelve specimens of Hollow Crown:
1st, W. J. Clemson, $3; 2d, W. W. Rawson, $2; 3d, W. H. Teele, $1.
Salsify.— Twelve specimens:
1st, W. J. Clemson, $3; 2d, P. Hurley, $2; 3d, Vincent Buitta, $1.
Cucumbers.— Pair:
1st, W. W. Rawson, $3.
Cabbages.— Three Red, trimmed:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
Three Drumhead, trimmed:
1st, A. E. Hartshorn, $3; 2d, Mrs. J. L. Gardner, $2.
Three Savoy, trimmed:
1st, Mrs. J. L. Gardner, $3; 2d, A. E. Hartshorn, $2; 3d, Ed. Parker, $1.

Brussels Sprouts.— Half-peck:
1st, A. E. Hartshorn, $3; 2d, Mrs. J. L. Gardner, $2.
Cauliflowers.— Four specimens:
1st, E. R. Teele, $3; 2d, C. M. Handley, $2; 3d, E. L. Lewis, $1.
Celery.— Four roots, Pascal, best kept:
1st, W. Heustis & Son, $5; 2d, Ed. Parker, $3; 3d, A. E. Hartshorn, $2; 4th, Arthur Nixon, $1.
Any other variety:
1st, Arthur Nixon, $5; 2d, Ed. Parker, $3; 3d, A. E. Hartshorn, $2; 4th, W. J. Clemson, $1.
Endive.— Four specimens:
1st, Vincent Buitta, $3; 2d, Vincent Buitta, $2; 3d, E. L. Lewis, $1.
Lettuce.— Four heads, best kept:
1st, W. W. Rawson, $5; 2d, Arthur Nixon, $3; 3d, A. E. Hartshorn, $2; 4th, G. D. Moore, $1.
Leek.— Twelve specimens:
1st, Mrs. Alice Warburton, $2; 2d, Ed. Parker, $1.
Corn.— Yellow or Field, twenty-five ears, traced:
1st, Elliott Moore, $3; 2d, A. F. Stevens, $2; 3d, E. L. Lewis, $1.
Tomatoes.— Twelve specimens:
1st, E. D. Jordan, $3; 2d, Ed. Parker, $2; 3d, E. L. Lewis, $1.
Collection of Vegetables, not less than ten varieties, decorative arrangement to be considered:
1st, E. L. Lewis, $8; 2d, Ed. Parker, $5; 3d, Vincent Buitta, $4.

Warren W. Rawson, } *Committee*
Warren H. Heustis, } *on*
Vegetables.

COL. FREDERICK MASON'S FARM TAUNTON.

REPORT OF THE COMMITTEE ON GARDENS FOR THE YEAR 1905.

BY OAKES AMES, CHAIRMAN.

During the year 1905 the Committee on Gardens received ten entries for the prizes of the Society. Of these entries six called for the inspection of gardens devoted to herbaceous flowers or vegetables, two for an examination of tree plantations, and two for visits to greenhouses. In addition to its regular work, the committee accepted an invitation to witness a demonstration at Jamaica Plain of power spraying for the destruction of the gypsy and brown-tail moth caterpillars.

In January the Board of Trustees passed a vote requesting the committee to consider the expediency of holding in the City of Boston a field demonstration to stimulate interest in the extermination of insect pests. At the same meeting it was voted that the committee should consider the advisability of offering prizes for the renewal of neglected apple orchards. In accordance with these suggestions a special meeting was held and the propositions of the Board were carefully considered. Though favorable to these propositions, the Committee on Gardens has not found it practicable to carry them into effect during the present year.

The following is a record in detail of the visits made in 1905.

George F. Fabyan's Greenhouse, Brookline.

The first visit was made March 7 to the estate of George F. Fabyan at Brookline to inspect his greenhouse devoted to the cultivation of choice plants. The greenhouse is 120 feet long by twenty feet wide and is partitioned into four sections. In the first section, palms, ferns and other foliage plants, together with many orchids are grown. In the second section was a display of cycla-

men, cinerarias, azaleas, and acacias. The third and fourth sections were devoted chiefly to roses and carnations. The visitors were favorably impressed by the beauty and masterly grouping of the plants,— clear evidence of the ability of the head-gardener, Mr. James Stuart.

Spraying Demonstration by the Boston Park Department.

By invitation of Mr. John A. Pettigrew, Superintendent of the Boston Park Department, the committee, on the afternoon of May 16th, attended a preliminary demonstration of power spraying for the destruction of the gypsy and brown-tail moth caterpillars. This demonstration took place in the Forest Hills Parkway. A grove of the highest trees was chosen for the experiment, and over the tops of these, some of them probably sixty feet high, spray was easily thrown by means of a hose sprayer held by a man standing on the ground. With the aid of ladders, an area of from seventy to one hundred feet in diameter was readily drenched with spray. Mr. Pettigrew thinks this promises to be a most effective method for controlling the moth pests. Furthermore, he estimates that forest lands adjoining roadways can be thoroughly sprayed at a cost of about twenty dollars an acre. A practical demonstration on a much larger scale has since been held by the Massachusetts Society for the Promotion of Agriculture in an infested area of ten acres of dense woodland at the junction of Wyoming Avenue and the Ravine Road in the Middlesex Fells region.

Dr. C. S. Minot's Peony Garden, Milton.

On June 15 the committee inspected the peony garden of Dr. Charles S. Minot at Milton, which had been entered in competition for the best garden of peonies, not commercial. Dr. Minot had between 260 and 270 varieties under cultivation, arranged in color areas or squares. Among the varieties in bloom at the time of the committee's visit the following seemed especially deserving of note: Triomphe de l' Exposition de Lille,

a beautiful form of light pink, introduced into Dr. Minot's collection from Holland in 1900. It is a profuse bloomer and was thought by the members of the committee to be the most desirable variety among the many excellent ones examined. Other blooms of a pink or pale rose color were the Coupe d' Hebe, with saucer-shaped outer petals, and the Charles Sedgwick Minot, a Richardson seedling of much merit. Among the crimson or red varieties were Delachii, a French peony (deep crimson), Eclatante (bright rose), and the anemone-flowered Rubra (magenta), obtained from Mr. T. R. Watson of Plymouth. Unfortunately many plants were not in bloom at the time of the committee's visit, so that the complete range of varieties could not be examined.

The Cherry Hill Nurseries, West Newbury.

On June 21 the committee visited the Cherry Hill Nurseries of Thomas C. Thurlow & Co., at West Newbury, to inspect his system of evergreen hedges grown as windbreaks and shelter for his nursery grounds. These evergreen hedges, composed of white and Norway spruce trees, symmetrically trimmed, are probably the most extensive in this section of the country. They range between 25 and 75 feet in height, and the tallest are allowed to grow naturally. While these hedges serve their purpose well, it is to be questioned whether nursery stock protected by them is not rendered temporarily tender and therefore subject to the rigors of inclement weather when transferred from the nursery to exposed situations.

Mr. Thurlow informed the committee that the hedges formed an exceptionally welcome shelter for birds, and he was of the opinion that the absence of insect pests from his nursery grounds was in a large measure the result of the encouragement of bird life afforded by the hedges.

The F. S. Mosely Estate, Newburyport.

On June 21 the members of the committee availed themselves of an invitation from Mr. Frederick S. Mosely to drive through his

estate on the banks of the Merrimac River previous to their visit to the Thurlow Nurseries. The drive was a most instructive one and notwithstanding a drenching rain, the committee was able to see some of the extensive plantings which Mr. Mosely has instituted with a view to foresting his estate. Mr. Mosely has kept the old woods and has planted white pine and chestnut.

Professor R. T. Jackson's Peony Garden, Cambridge.

On June 22 the committee visited the peony garden of Prof. Robert T. Jackson at Cambridge. Prof. Jackson's garden is a good example for the treatment of a suburban estate of less than twenty thousand square feet. He had under cultivation at this time 125 varieties of peonies, among them 18 of the notable Richardson seedlings.

Vegetable Garden of the Taunton Insane Hospital.

On July 28 the committee inspected the vegetable garden of the Taunton Insane Hospital, entered in competition for the prize offered for the best vegetable garden.

M. F. Plant's Estate, Groton, Conn.

On August 4 the committee visited the estate of Mr. Morton F. Plant, at Groton, Connecticut, entered for the Hunnewell Triennial Premium and for the prizes offered by the Society for the best herbaceous and vegetable gardens, and for houses of chrysanthemums. This estate is a very good example of what perseverance and industry may do toward the conquest of adverse conditions. A large part of the extensive lawn was made by excavation of solid ledge. The herbaceous garden contained numerous specimens of interesting annuals and perennials, the main part of it forming a border around the formal garden which lies in front of the house. The vegetable garden, located about half a mile from the house, near the farm buildings, covers nearly three acres and at the time of the committee's visit was devoted to a general assortment of vegetables.

Robert Roulston's Garden, Roxbury.

On August 14 a delegation of the committee inspected the garden of Mr. Robert Roulston, which is situated on the corner of Burrell and Clifton Streets, Roxbury, Mr. and Mrs. Roulston are much interested in the cultivation of flowering plants and with the limited amount of space at their disposal have obtained results deserving of high commendation. This garden illustrates the capabilities of a city yard.

Col. Frederick Mason's Farm, Taunton.

On August 22 the extensive farm of Col. Frederick Mason at Taunton was visited. Of the seventy-four acres comprising the farm, twelve or fifteen are devoted to vegetables. The committee was very favorably impressed by the neatness of the grounds and the excellence of the crops.

M. F. Plant's Chrysanthemum House, Groton, Conn.

In November, two members of the committee went to Groton, Connecticut, to inspect the chrysanthemum house of Mr. Morton F. Plant, which had been entered by the superintendent, Thomas W. Head, as a house of specimen blooms. The house entered was 40 feet long and 20 feet wide and contained about 500 plants on three benches. The middle bench was planted, almost entirely, with the varieties Wm. Duckham and Mrs. Wm. Duckham, and the two side benches with Merza. The plants in the center averaged about seven feet in height, while those on the sides were a little shorter. The flowers were of good size and well developed, and most of the foliage was in good condition.

Special Prize for Small Estate.

The committee wishes to call attention to the Special Prizes of $50.00 and $25.00 offered for the best-kept estates of from

one to three acres in Massachusetts. There have been no entries for these during the present year.

Prizes and Gratuities have been awarded as follows:

Special Prizes from the John A. Lowell Fund.

For the best House of Chrysanthemums grown for specimen blooms:
First, Morton F. Plant $40 00

Society's Prizes.

For the best Garden of Peonies, not commercial:
First, Dr. Charles S. Minot 30 00
Second, Prof. Robert T. Jackson 20 00
For the best Vegetable Garden:
First, Col. Frederick Mason 30 00
Second, Taunton Insane Hospital 20 00

Gratuities.

George F. Fabyan, Cultural Certificate for splendid condition of Greenhouse.

Boston Park Department, John A. Pettigrew, Superintendent, Honorable Mention for spraying demonstration.

Frederick S. Mosely, for his successful efforts in landscape forestry, Honorable Mention.

Robert Roulston, for his flower garden, Bronze Medal.

Thomas C. Thurlow & Co., for their system of shelter belts of spruces, Honorable Mention.

Committee on Gardens.

Oakes Ames,
George Barker,
Wm. N. Craig,
A. F. Estabrook,
A. H. Fewkes,
C. W. Parker,
J. A. Pettigrew,
Wm. P. Rich,
H. P. Walcott,

FAIRHAVEN MASS. SCHOOL GARDEN IN EARLY SUMMER.

REPORT OF THE COMMITTEE ON SCHOOL GARDENS AND NATIVE PLANTS FOR THE YEAR 1905.

BY HENRY SAXTON ADAMS, CHAIRMAN.

The year 1905 marks a turning point in the activities of this committee, it being the last year that prizes will be awarded for Children's Herbariums and Native plants, and it has been most successful. In the year to come the committee will be known as the Committee on Children's Gardens, and all our efforts will be directed to the encouragement of gardening among children, which is more directly in line with the objects of the Society.

During the year we offered prizes for school gardens, children's home gardens, children's herbariums, and native plants. The work now dropped is that connected with the last two and we think that we can carry out the purposes of the Society better by this change. While we regret being obliged to make the change we are very glad that the Trustees concur with us in the matter. Early in the year, very soon after our prize circular was distributed, a letter was printed in the Boston Transcript criticising our offering prizes for children's herbariums, the writer complaining that we were encouraging the destruction of native plants. It was thought wise to call together the members of the committee and to ask several members of the Society for the Protection of Native Plants and others interested, to meet with us to discuss the subject. While this gathering was not largely attended it resulted in a decision that we were not encouraging the destruction but rather helping the protection of native plants, and we made no change in our efforts. As it has now been decided to drop this work as too botanical for our Society, nothing further need be said.

On looking over the results already accomplished we felt, that, while we had fostered the school garden movement from the very beginning, we were not having entries from all the gardens in the state and that we were not giving encouragement to more than a

few of the older gardens. In order to bring our work before the public four articles were written, one on each phase of the work, and published in the Boston Transcript. We also sent out a large number of our circulars to superintendents of schools and others likely to be interested. The results of this canvas were most satisfactory as seen by the increased interest in our work and in the number of entries for prizes.

In order to become better acquainted with the children's garden movement and that we might carry on our work more successfully your chairman visited nearly all the gardens entered for prizes. In this way it was possible for him to better understand the existing conditions as well as to talk with the garden workers. A number of other gardens were also visited; among these were the School of Horticulture at Hartford, Conn., and the School Gardens of Hartford and Amherst, Mass. The great lesson learned was that children's gardens are successfully carried on when under the leadership of an experienced garden director or teacher. No matter how enthusiastically the work is undertaken, without a proper understanding of gardening it is usually a failure, and the movement likely to be given up. In all cases during these visits your chairman was cordially welcomed and usually a conference resulted which was helpful to both. There is a crying need for an institution in this state similar to that at Hartford, Conn., where school garden work can be taught, and it is hoped that such an institution will be started in this vicinity at an early date.

Children's Garden Conference.

With the hope of bringing together those interested in the movement a conference was planned in connection with our Children's Herbarium Exhibition in December and it proved a great success. Invitations were sent out to a number of prominent children's garden workers asking them to come and take part in the exercises. It was very gratifying to find that these invitations were heartily accepted and the success of the conference was assured. A printed announcement was sent out two weeks in advance and suitable reading notices were kindly printed by the leading papers. The

program included an address of welcome, the announcement of awards for school and home gardens, and seven ten-minute addresses covering various phases of the work. Ample opportunity for discussion followed. A unique feature was a model garden bed illustrated by a practical exercise by a boy gardener and teacher. The Conference was held at Horticultural Hall, Saturday, December 2, at 10 o'clock.

Your chairman called attention to the fact that our Society gave encouragement and financial assistance to the first school garden in the country, which was started in Roxbury as an experiment. We may therefore consider ourselves leaders in the movement. He briefly reviewed the present conditions, told of the aims of the committee, and asked for the coöperation of all interested in order that the work might be carried on to the best advantage. After announcing the awards he introduced the first speaker, Miss Esther F. Hallowell. She spoke in place of Miss Anne Withington who was unfortunately obliged to be out of town. Other addresses followed and nearly every side of the children's garden movement was discussed. As many valuable points were brought out the speakers were asked to furnish abstracts of their addresses and these are given in connection with this report.

School Gardens.

There were twelve entries for prizes for school gardens this year and all but two sent in reports. This is a gain of nine over last year and the largest number ever entered in one year. The season opened up dry and some of the gardens were very discouraging in the beginning, but picked up later, and in most cases gave satisfactory returns.

It is well to call your attention to the classes of school gardens which we find. One connected with the public schools and usually in a dormant and weedy condition during the summer, to be revived again with the opening of school in September. Another, not connected with a regular school, which begins with the opening of spring or as early as possible without interfering with the regular school work of the children and continuing through the summer

until frost. It is very difficult to manage in a public school a garden which will last through the summer, but in some cases, as at Fairhaven, this is most successfully accomplished. In other places the children who stay at home during the summer work in their gardens while those who go away are obliged to give them up. In large cities the summer school garden is very important and never lacks children; in many places a long waiting list is kept and any vacancies are readily filled. Where the children go away they often have a home garden at their summer home.

The reports of the gardens sent in were very satisfactory and it was difficult to award the prizes. After careful deliberation it was decided to give besides the prizes two honorable mentions. There are six prizes offered next year, three for the established or large gardens and three for new or small gardens. The classification here is rather indefinite but it is our desire to give small and new gardens all the encouragement possible. Whatever we do we are very anxious to put school gardens on a permanent basis and it is with these ideas in mind that we are working. The reports of the directors of the prize gardens will be found further on.

Children's Home Gardens.

During 1904 we offered for the first time three prizes for home gardens and there were five entries. In making up the list for 1905 great hesitancy was felt by the members of the committee as to the advisability of offering more than three prizes. It was decided, however, to try the experiment and the number was increased to ten. When the entries were in it was discovered that we had over two hundred and we found we had made no mistake.

We visited the home gardens as far as possible and found it was very encouraging to the children to do so. We still feel that the children's home garden movement is a very important one and that local organizations and parents should encourage the children to have them. We have increased the prizes for 1906 both in number and in amount and call special attention to the fact that girls receive the same prizes as the boys.

The two principal centers for home gardens this year were at

Ayer and Reading. Unfortunately the gardens at Ayer were not as well kept up as might be desired, though some were very nice; here again the dry weather discouraged the young gardeners. In Reading the home gardens are encouraged by the Woman's Club and some very prettily gotten up reports were sent in. A larger number entered than were reports received which brings out an important point, namely, that a local organization can sift out the best reports from those entered for our prizes and thus save us a good deal of trouble; it also helps as they are often better judges of the gardens. We want to see a great increase in this work the coming year and feel that our prizes are sufficiently large to attract competitors. It is impossible for the committee to visit a very large number of home gardens, but if those which are the best in any locality are selected, the chances of visiting them increase and in this way the children are encouraged.

Several letters from home garden prize winners follow.

Children's Herbariums.

Owing to the great number of herbarium sheets exhibited during 1904 it was necessary to limit the number acceptable from any one child. As a result of this better sheets were brought in, though fewer in number. While in 1904 there were 2316 specimens received but 1815 were awarded prizes. This year only 989 were sent and 780 accepted. Of the 201 rejected 148 were improperly labeled so that had our rules been carried out by the competitors comparatively few would have been rejected. We were also enabled to vary the amount of our awards according to the value of the sheets which was impossible last year owing to the number of sheets accepted and the lack of funds.

The exhibition this year was held in the large hall, on account of the Children's Garden Conference in the lecture hall on Saturday morning. It occupied two-thirds of the hall and was well staged. An exhibit of evergreens from the Chrysanthemum Show added greatly to the appearance of the hall. Prize cards were put on the exhibits at the opening on Friday morning and we believe that the awards were in every way satisfactory to the children.

Photographs from school and home gardens, collections of insects, and garden reports were also put on the tables, making altogether the most interesting exhibition ever held by our committee. We are very glad that our last exhibition of children's herbariums proved so successful and hope that our children's garden efforts will produce as many horticulturists as the herbarium work did botanists.

Native Plants.

The exhibits of native plants, for no apparent reason, were fewer during the year than last year. The exhibits themselves, however, were good and in every way up to the standard, in some cases even better. It was recommended by your chairman that the awarding of prizes for native plants be taken away from the work of the committee as it is so different from the children's garden work that the committee became divided in interest, those caring for native plants not being interested as deeply in the children's garden movement. It will probably be remembered that the work of awarding prizes for native plants has been at various times part of the work of our committee and at other times under the jurisdiction of a special committee. Your chairman recommended that a new committee be appointed to take charge of the native plant exhibitions. It was decided, however, by the Trustees that the exhibits of native plants were of a botanical nature and should not be continued by the Society. While this is sincerely regretted in some ways it is perhaps for the best and we are very glad to be relieved of the work.

Children's Exhibitions.

Members of the committee visited the two children's garden exhibitions of the Worcester County Horticultural Society at Worcester during the past summer with a view of holding similar exhibitions in Boston. The exhibits were successful in every way and we were glad of the opportunity of studying the methods employed. Due credit should be given to Secretary Hixon of the Worcester Society for his efforts in this work.

CHILDREN'S GARDEN AT GROTON MASS.

Carrying out this idea we are offering prizes in our new circular for 1906 and hope to have two successful exhibitions, one in June and one in September.

Looking Forward.

Under the new name of Committee on Children's Gardens we have a definite line of work and with an increased appropriation we expect to place our Society at the head of the movement in this state.

Our goal is reached when every school in Massachusetts has a garden and every child has a home garden. We believe that if this goal is ever reached the results in happier and better children and in improved home surroundings will amply repay all our efforts. We ask the hearty coöperation of all members of the Society and thank the Trustees for their attention to our requests. The field is broad, the results inspiring, and our onward movement is dependent on our energy and the money at our command. May both increase in the year to come.

Abstracts of Addresses made at the Children's Garden Conference.

Held at Horticultural Hall, Boston, December 2, 1905.

School Garden Work in Boston Schools.

BY MISS ESTHER F. HALLOWELL, BOSTON SCHOOL GARDEN COMMITTEE.

The Rice School Garden on Dartmouth Street, which was started in connection with the Boston Normal School in the Spring of 1901, may be said to be the pioneer in the attempt to establish garden work in the congested districts of any large city. A vacant lot near the schoolhouse was secured and the ground dug up and fertilized by many loads of street sweepings. The lot was then divided into individual beds, 8 feet by 4

feet, which were given to children of the seventh grade. Seeds were planted and watered by them, and soon the heretofore barren ground began to be spotted with green. Support for this garden both active and material was given by a committee of the South End House. Later in the year the Twentieth Century Club of Boston helped. The following fall there was introduced into the Normal School an elective science course with practical work in the Rice Garden.

During the summer of 1901 the Civic League Garden was established on the Columbus Avenue playground. Beds were allotted to the children in the order of application.

In the spring of 1903, with these two gardens as examples, seven new ones were established by the Women's Auxiliary of the American Park and Outdoor Art Association. Later these committees merged into one School Garden Committee.

This committee now has the supervision of nine school gardens. Five of these gardens are confined to very limited spaces in the school yards, and therefore the separate beds are much smaller than they should be for the best work. But in these crowded districts we are thankful for every inch of ground given us. The schools above referred to are the Lyman and James Otis of East Boston, the Hancock in the North End, the Winthrop and the Martin in the South End.

The Wells (girls) and Phillips (boys) Schools, of the West End, are situated in one of the most congested quarters of the city. The school yards are large enough only for the children to stand during their recess periods, crowded together like penned up animals. To enable these children to "farm" the Boston Park Commission has been most obliging in giving two strips of land on the water front of the Charlesbank Park which have been converted into 118 beds. The Park Commission placed fences around the strips and plows up and fertilizes the ground each spring before the children go out to make preparations for planting.

The problems of space and fertilizing which must be faced and overcome by the city gardeners practically disappear when we go to the suburbs. The two suburban schools, the Washington Allston in Allston, and the Blackington in East Boston are fortunate in having enough land to enable each child to possess a larger plot and therefore to accomplish more satisfactory work. The Washington Allston school has several fruit trees on its premises.

In the Boston public school curriculum two hours a week are set aside for nature work. Through this channel, with the interest of the school authorities and the coöperation of the masters and teachers, the garden work has been introduced. It is one of the great objects of the committee to have the garden work bound to the school and made as important a part of a girl's or boy's school training as the manual work. To accomplish this object with profit to the children correlation of garden work with school work is essential; for by this correlation not only will the garden become more lasting and valuable but the other school lessons

will be made alive by the contact every child has with real good earth and real live plants. If the garden lessons could be continued through the school months the children's interest in the outdoor work would be kept awake during that period when their gardens are sleeping under the snow of our New England winters. There is plenty of material for these lessons.

In September the new class, preferably seventh grade, is taken out to examine the condition of the plants, the seeds, and the weeds in the garden after a summer's cultivation. In October and November the garden is cleared, the shrubs are pruned, the ground is dug and fertilized, perennials and bulbs are planted, and the garden covered for the winter.

Planting of bulbs in the school rooms is done now also. In connection with the fall work the children are taken to the fruit and flower exhibitions in the city where the examples they see give unimagined pleasure and arouse great interest in "growing things." During the winter months of December and January lessons on the soil and experiments in germination go far to prepare the children's understanding of what they must do and see when the outdoor work begins. In February seeds are planted in window boxes so that the small tomatoes and cabbages will be ready to set out as soon as the weather will permit. With March come the catalogues, the garden plans, the buying of seed, etc. April, May, and June present more work than can well be done in the allotted two hours a week. When school closes in June many of the children for one reason or another are unable to attend to their beds. But as many as are able continue to appear at stated hours to continue the work and the vacant places are filled by other children. A part of the vacation work — or pleasure — are the excursions to the market gardens of Arlington where the children are enabled to see on a large scale what they have already seen on a tiny scale in their little city plots. The work done in the vacation months is in the entire charge of a voluntary committee in coöperation with the school authorities. There has been an attempt to coöperate with the vacation schools.

If a child has attended school regularly and has been able to care for his garden in the summer he has seen performed under his eyes a complete cycle in the vegetable life. Add to this the correlation with his other school studies and the garden becomes a real part and a valuable part not only of his life but of the life of the world.

In his arithmetic he can find the area of his own garden instead of an imaginary field; from his window box he can study a right angle; in his manual training class he makes the window box, the markers, and sometimes even the tools; in his geography he learns in what part of the country is grown the hemp, flax, and grains, specimens of which he sees in his own plot; in his drawing class he draws a flower or seed from his own garden instead of one brought by the teacher; in the cooking class the girl cooks her own vegetables; in the language class the boys and girls write letters to the seedmen for catalogues or to the agricultural depart-

ment for seeds, and keep diaries of what goes on in the garden. Thus the garden and all pertaining to it mean something. So many are its advantages that it seems to demand a place in every school.

The necessary money for the support of the gardens was supplied in the beginning by a voluntary committee. More help has come each year from the city and ultimately the whole responsibility will rest upon the city.

I have spoken somewhat of the educational value of this garden work. I want to say just a word about the economic value. Boston is so situated that its suburbs are near at hand and very accessible ; that is, Boston has special facilities for an outward movement. It will therefore be of the greatest service to the city if, by teaching the children to be interested in the cultivation of the soil, the congested districts be relieved.

School Gardens as a Preparation for College.

BY F. A. WAUGH, PROFESSOR OF HORTICULTURE AND LANDSCAPE GARDENING, MASSACHUSETTS AGRICULTURAL COLLEGE, AMHERST, MASS.

The following points were brought out:

(1) School garden work is many sided and bears on many things. Its value in the preparation for college is only one of these things and not the most important.

(2) Preparation for college is usually considered the business of the secondary schools and academies. However, college preparation consists of everything a student goes through up to the time of college entrance.

(3) Too much thought is sometimes given to preparation for college, especially in the high schools. The high school curricula are sometimes designed as though all high school students would enter college, while as a matter of fact a very small proportion of them do.

(4) Nevertheless, preparation for college is confessedly inadequate. There is great complaint that students come to college insufficiently prepared. If this complaint has good foundation when made by the classical colleges, it must be doubly true when made by the technical and agricultural colleges, because high schools and academies do very little in preparing their pupils for agricultural courses.

(5) The work of the school garden to some extent meets this confessed deficiency. It leads more directly toward the work of the technical and agricultural colleges because it deals with the materials of those courses. At the same time it strengthens the pupils' work in precisely those elements where it is confessed to be weak from the standpoint of general training, namely, in initiative and in independence of thinking. This is because the school garden deals with concrete subjects and phenomena instead of with abstract ideas and mere words.

(6) The present speaker confesses to a strong prejudice in favor of that sort of college training which is based upon the sciences rather than upon the classics, so called. He believes the mind secures a better drill in dealing with concrete things and phenomena than in dealing with abstract ideas; that it learns to reason more rapidly and accurately by following from effect back to cause in the study of natural phenomena than in learning by rote some artificial language; and that the training of the judgment which necessarily goes with this practical activity is of paramount importance in all the work of life. From these premises it is very easy to reason that school garden training is valuable to pupils by introducing them to a better sort of college course than they might otherwise elect.

The School Garden as a Factor in Village Improvement.

BY PHILIP EMERSON, PRINCIPAL COBBET GRAMMAR SCHOOL, LYNN, MASS.

The Massachusetts Commission on Trade Schools has found that children who leave school for work early are of little value to employers because they lack the initiative and sense of responsibility that were once developed amid the manifold occupations of the farm home. The school garden may aid effectively in securing these qualities. The school should inspire, instruct, and train the children by means of a model school garden; and then the children should apply their knowledge and skill in improving their home grounds and caring for their own gardens there.

When the child of a Russian immigrant laboriously sifts the trodden soil of a tenement back yard, plants corn and flowers in place of stones and tin cans, and guards the growing plants until the corn appears on the table of his proud parents and vines cover the old fence and tumbling outbuildings, then something worth while has been accomplished in his education; he will have developed initiative and a sense of responsibility.

Home gardens in whose care the children have stimulus and advice, by means of the school garden, are better than individual gardens at school where assignment and direction are the rule. Independent work at the right point is best. Prizes, perhaps of hardy plants, and due recognition of merit are essential. The school garden should be a center for civic improvement. Hardy perennial flowering plants may be propagated at school from seeds, divisions, and cuttings, for sale to citizens of a city or town. The children are given training in their care, and a great variety of the best hardy plants may be very cheaply introduced into a community, the school incidentally receiving a considerable revenue from their sale. In the Cobbet gardens a single hardy chrysanthemum secured in the spring of 1904 has now multiplied to over 250 plants that will be distributed in the spring of 1906. We have dozens of varieties of seedlings in cold frames.

A city school garden should carry garden work throughout the year, by means of cold frames, hotbeds, window gardens, mushroom beds in the cellar, and ere long by a school greenhouse. Such intensive garden work is the appropriate training for city conditions where land is valuable and children have time to spare. What school garden development most needs is instruction for teachers. The Massachusetts Agricultural College should publish leaflets and arrange extension courses for teachers. There should be a practical class in gardening open to teachers in one or more places of eastern Massachusetts. There are failures and much waste in the work now because of the inability of teachers to grow plants with full success.

Children's Gardens from Frost to Frost.

BY HERBERT D. HEMENWAY, DIRECTOR SCHOOL OF HORTICULTURE, HARTFORD, CONN.

Three things fix a man's value in the world. His knowledge or what he knows, his ability or what he can do, his character or what he is. The school should help in developing all three, and the school garden is perhaps the most potent factor in developing the man. It increases his knowledge and his ability to do things and develops his character.

The school garden can be correlated with all other things taught in the class room. It takes away the drudgery of the school life. Children having some outdoor work in the garden, generally, if not always, develop more rapidly mentally as well as physically and morally.

The school gardens at the Hartford School of Horticulture begin for the first year in May; the second year in March; the third year in February; and the fourth and fifth years in January; and continue until October. The children come into the class room, where they receive their notebooks, and write down from dictation or copy from the blackboard definite directions; then with the instructor and their seeds they pass into the tool room, where they receive their tools, and then into the garden, passing by observation plots of all of our common agricultural and market garden crops, flowers, and fruits.

There are now about five hundred different kinds of things growing at the School of Horticulture; all distinctly labeled with the common English names.

While an agricultural failure may not be an educational failure, we should try to have the school gardens succeed, and have results from an agricultural and horticultural standpoint. The moral value of success is very great and wherever possible the gardens should be conducted right through the summer so that they may never become overgrown with weeds.

In this way it will keep the boys occupied or otherwise they would be on the street learning nothing that was good and often sowing the seed of future crime. The gardens should begin early, as soon as the frost is out of the ground, the land should be thoroughly prepared, and they should continue right through the summer. We should have the gardens from frost to frost, and the best possible results not only from a horticultural standpoint but from the development of body and character. It also has a money value. The children learn something of industry and are able to work about the city, and take care of lawns and make themselves useful, thereby increasing the earning power of the family.

School Garden Work in Cleveland, Ohio.

BY MISS LOUISE KLEIN MILLER, CURATOR OF SCHOOL GARDENS.

Miss Miller told of the work which had been done by the Home Gardening Association, in conjunction with the Board of Education, in inaugurating school gardening in Cleveland and spoke very enthusiastically of the work which had been accomplished and which they expect to do in the future. Cleveland aspires to be the most beautiful city in the country and it is expected that the school gardening work will do much to bring about this condition. The following abstract will give a good idea of some phases of the work at the present time.

The school garden work in Cleveland has now passed far beyond the experimental stage. Up to this year all the time devoted to the garden work has been out of school hours, but it is now planned to make the practical operations of the garden correlate with other branches of study.

The study of soil formation; the relation of heat and moisture to soil; the capillarity of soil; the weather record; the relation of plants and animals to soil are all fundamental to the study of geography.

A child who has laid out his garden with a tape measure, drawn it to scale, and dug the soil, has a definite knowledge of lines, area and volumes. The weighing and measuring of his products and its estimate in money value, give a more vital significance to the study of compound denominate numbers than any artificial device. The opportunity of doing rational nature study in the garden is too apparent to need comment.

The school garden work already accomplished has made Cleveland well and favorably known in all parts of the country where progressive work is appreciated.

The school garden movement was first inaugurated in 1904 by the establishment of four gardens, the expense being assumed jointly by the Home Gardening Association and the Board of Education. This year the Board of Education assumed entire control and established eight gardens in dif-

ferent parts of the city. Owing to the lateness of the season and the unprepared condition of the soil, planting was not begun in some instances until the last of June and there were many difficulties to overcome.

The object is to make the school grounds and gardens radiating centers for civic improvement.

Children's Garden Exhibitions.

BY ADIN A. HIXON, WORCESTER, MASS.

The first exhibition of children's school gardens that I remember was a little more than 50 years ago. At that time I attended school in Dedham, and Mr. Richardson, afterward editor of the Boston Congregationalist, was the teacher of the school. We had a large school yard of about an acre or an acre and a half, and it was at Mr. Richardson's suggestion that we had a garden. The boys had a large yard to play in with room for a ball ground next to the schoolhouse, and a chestnut and oak grove on the other side. The girls also had a large yard where there were plenty of shade trees, although these were not too thick to admit the sun in the morning. Their yard was separated from adjoining property by a high board fence and the teacher suggested that we make a garden alongside of this.

The fence was some 200 feet long and we made a garden about 100 feet long and four or five feet wide. It was Mr. Richardson's idea that the boys should make the garden and we set to work filling it with various plants that the children brought from their homes. The boys did all the digging, wheeled away the stones, and brought the dressing in wheelbarrows.

The boys at that school took much pride in this garden and cared for it faithfully that year and the next. What became of it after that I don't know as I left school the next year. Not only did the boys take good care of the garden, but they began to take some pride in the school yard, carted away the stones and cleaned it up generally.

While I am a believer in school gardens in certain ways, I do not believe in a society like the Worcester County Horticultural Society offering prizes for school gardens until they are endorsed by the school committee, or that that body at least gives its consent to them.

The first school in Worcester to arouse interest among the pupils was the Upsala street school, where Principal Miss Mary C. Henry interested her pupils and teachers to an unusual degree. The teachers at this school gave the pupils of several grades seeds of the bachelor's button, nasturtiums, and petunias, which they were allowed to take home and plant. Just before the close of school they were requested to bring the products

of their gardens to school and prizes were awarded. Over 250 specimens were brought in and prizes of from 25 to 50 cents given. The effect of these gardens on the neighborhood was wonderful, as neighbors became interested in the work of the children, and gradually turned to it themselves, thus changing the whole appearance of the neighborhood.

Then the Dartmouth street school did something similar in giving out seed to the children. Before the close of school I went up there and talked in three different rooms, where the grades where doubled up. The teachers had the children bring their crops to school and there was an exhibition in the school corridor, where the flowers and vegetables had been arranged on long tables. I questioned the children to see if they knew the names of the different specimens and asked how they grew the things. The classes came up one at a time and we had sort of an object lesson. Several times after this various exhibits of the best were taken and sent to the Worcester County Horticultural Society's exhibitions, where they were given prizes of money, which was used in embellishing the school rooms.

The Worcester County Horticultural Society had considered various propositions for encouraging children but they never amounted to anything until this year, when the society appropriated $50 for two children's exhibitions. A schedule of premiums was made and sent to the various school children and others interested in the work throughout Worcester county, offering $1, 80 cents, 60 cents, 40 cents, and 20 cent premiums for the best collection of vegetables and for the best collection of flowers grown from seed, and prizes for various specimens of vegetables and different kinds of flowers of 50 cents, 40 cents, 30 cents, 20 cents, and 10 cents.

Any child under 14 years of age was entitled to exhibit; the work from the planting to the harvesting of the crop to have been done by the child itself. We had two exhibitions, one in July and one in August, which resulted in our having 35 exhibitors at one time and 37 at the other. While nothing had been said regarding gratuities, the committee decided to give a gratuity of 10 cents for every exhibit which did not take a prize. The enthusiasm and interest shown by the children was simply marvelous. One of our most earnest workers was Roger Newton Perry who took your first prize for home gardens. He was one of our largest exhibitors and did some splendid work.

A feature of the exhibitions was that the children were paid their premiums on the spot. I believe that when you tell a child you'll do something, in doing it, and right away, too. Immediately after the show we paid the children just what we owed them and every child was happy because everyone got something. I received several letters from some of our young exhibitors afterwards, thanking me for the good time the society had given them.

These exhibitions were so successful and were received so favorably that the society has appropriated double the amount of money to have similar exhibitions next year.

School Garden Notes.

BY FRANK M. MARSH, SUPERINTENDENT OF SCHOOLS, FAIRHAVEN, MASS.

After listening with you to the many interesting phases of the work with children's gardens which have been presented by the speakers this morning, I shall not attempt to add anything new, but I am constrained to ask you, for a moment, by way of review, to consider one or two points that may be open to discussion. First: children's gardens should not be begun without careful plans and preparation on the part of the director. I am firmly convinced after several years' experience that the garden movement, in its most sane aspects, is the best method of nature study that has yet appeared. It should not be taken up in a headlong manner as the result of a bit of temporary enthusiasm which has seized some one who has not counted the cost in labor, thought, and planning necessary to reach an ultimate goal which may be of sufficient worth to pay for the undertaking.

I have, now, in mind a city which of all cities in the state would be greatly improved by the children's garden idea; but in which a hastily conceived and poorly completed attempt at school gardening brought about failure, with the natural result that the whole idea has been sadly discounted and put in the background for many years. Do not injure the cause by starting with only surface knowledge and enthusiasm. Plan wisely and try to realize the highest aim of the movement.

This leads me to criticise some of the aims and purposes set forth in the papers this morning. Some of these aims and purposes have been devised to controvert the claims and criticism of the unthinking who look upon the work as a "fad" which to the public is a horrible but indefinite something. I want to urge one and all not to allow children's gardening in any of its forms to be taken up in such a way as to be looked upon as a "fad". Make it a success and the result will make the doubtful critic sorry that he had not deeper insight into the movement before he passed his hasty judgment.

It is not necessary to go very far afield to find an excuse for the garden idea for children. I fear that a tendency has been too often shown to make the movement too pedagogical; too cut and dried. Do not kill the enthusiasm of the young gardener by making him feel that his garden work is for the sake of helping his arithmetic, his language, or his nature study. It is well to correlate, but do it indirectly or it will, I fear, react unfavorably if we continually try to defend the school garden by illustrating how it may be used for the sake of numbers, language, science, etc. If the idea of children's gardens has not sufficient merit and value to stand upon its own feet it had better fall before it climbs any higher.

I like to put the matter the other way, and this, perhaps, is what our friends mean, *i. e.*, to correlate the subjects of science, language, and numbers with *gardening* in such a way that these subjects may serve as aids to gardening and be used as means or instruments for the sake of the more real thing, the garden. It is not necessary to apologize for the children's garden by showing how the idea may be correlated with all the rest of the curriculum. As I have before said, I fear that any such cut and dried treatment may take away the very naturalness and life of the movement and put out of sight the real kernel and highest purpose of the garden idea.

Another claim is often made that through the gardening a business instinct is developed. Examples of bright boys selling products, cornering the market, getting control of the other boys' crops, etc., are set forth as results. It is not denied that thrift may be developed, but it is not necessary to use the school or home garden to teach the bright Yankee boy how to do a commercial trick. There is enough of this spirit in the air to make it sufficiently contagious.

The real aim, it seems to me, is to create a love for the beautiful plant and shrub and to show the boy how to make a small plot of earth or yard serve as an economic aid to the home not only in supplying vegetables but also flowers and beautiful surroundings. Children's gardens are not for the sake of the school or the subjects in the curriculum, but for the more important institution, the home, and for the sake of the children themselves. We aim to develop patriotic citizens, but if a man loves his home it is not difficult to arouse his patriot spirit in time of war. It is a higher type of patriotism which makes a boy love his home enough to have a desire to make it beautiful and wholesome within and without. Teach a boy or girl how to make a back yard beautiful and fruitful, how to make and keep a fresh and even lawn with its boundary of shrubbery, and you will have aroused a new interest in the home and with it a corresponding love therefor.

A community made up of such individuals and such homes will be wholesome and beautiful. The character of any place depends so much upon its homes that any movement that tends toward their improvement will be worth the cost.

My word of warning, then, is to be certain that children's gardens are never introduced until sufficient preparation is made to assure permanent success. Do not make the idea too pedagogical thus diverting attention and interest from the real and living aim which it seems to me is to interest the child in the possibilities and beauties of nature through a knowledge of vegetable and plant life; and, finally, utilizing this interest in beautifying the home and its surroundings.

These experiences will not only react upon the character of the town but also upon the life and character of the individual boy and girl.

Ten Minutes in a Boy's Garden.

BY MISS ELIZABETH S. HILL, DIRECTOR OF CHILDREN'S GARDENS AT BROOKLINE AND GROTON, MASS.

Property:
Garden Tools, Garden Line,
Overalls, Jumper, Hat,
Model Garden.

Dramatis Personæ:
E. S. Hill, Garden Director,
Daniel Needham, Garden Worker.

Scene:
A Boy's Garden, 15 feet × 5 feet.

(*Enter Garden Director.*)

Garden Director: "I wonder where Daniel is; he is always so punctual."

(*Enter Daniel.*)

Garden Director: "Good morning, Daniel."

Daniel (*taking off hat*): "Good morning, Miss Hill."

(*Looking garden over.*)

Garden Director: "How does your garden grow?"

Daniel: "It grows all right. See how nice the rain made it look!"

Garden Director: "Yes, 't was just what it needed. Artificial watering never does so much good as the rain. Did you see anything on your way?"

Daniel: "Oh, yes! I saw a little pink moth on an evening primrose. I could hardly tell it from the flower."

Garden Director: "That is what is called 'protective coloration'. The evening primrose is a night blooming flower; the pink moth comes at that time to sip its nectar. In the morning, the flower closes, fading to a pink color, enclosing the little pink moth. It takes pretty sharp eyes to tell whether it is a moth or a petal."

Daniel: "I saw a handsome bird, all yellow but wings, tail and cap black. It went dipping through the air, singing, 'chè che che chè, chè chè che chè'."

Garden Director: "That was the goldfinch. He *is* a handsome bird, a great friend of the gardener. He is a weed seed eater, and one third of his food is injurious insects. They stay in flocks all winter, turn an olive brown color, and don their yellow dress when the dandelions begin to bloom."

(*Both looking garden over, Daniel hoeing a little.*)

THE FIRST OF JUNE: CHILDREN'S GARDEN GROTON, MASS.

Daniel: "There aren't many weeds in the garden, are there? Had I better hoe it?"

Garden Director: "It is just as well to do so, as it makes the soil more porous, letting in sun, air, and water. Many German gardeners never use fertilizers, but keep the land thoroughly hoed. Have you written in your note book the amount of vegetables you expect to raise in your garden this year?"

(*Daniel opens note book.*)

Daniel: "Yes, Ma'am." (*Reads.*)

"6 sunflowers, 24 ears of corn, 50 tomatoes, 15 quarts string beans, 52 beets, 2 pecks beet greens, 250 radishes, 34 heads of lettuce, 1 peck small lettuce, 66 turnips, 2 pecks turnip greens, 3 cabbages, ½ bushel spinach, many flowers."

Daniel (*looking up*): "Do you want me to read what I did in the garden Tuesday?"

Garden Director: "Yes, do."

Daniel (*reading*): "Tuesday, July 28. Hoed corn. Thinned the beets. Took 1 peck of beet greens. Pulled 2 dozen radishes, 2 heads of lettuce, and picked some flowers. Sold one half on the way home. Ate the rest. I saw a dragon fly come out of his skin. He was clinging to the bridge. He was soft and flabby when he came out, but grew stiffer and stiffer, and at last flew away. He eats mosquitoes." (*Daniel closes his note book and continues his hoeing.*)

Garden Director: "I am glad you saw that dragon fly; it is one of the most wonderful sights you will ever see. What have you done with most of your garden stuff?"

Daniel: "What we haven't eaten, I've given away or sold. They say our beets are sweeter than those they buy at the market."

Garden Director: "Good enough!"

(*Daniel finishes hoeing.*)

Garden Director: "Now you've hoed it all over, we'll transplant the lettuce, so the plants will be one foot apart, one foot from main row, and six inches from edge, — five plants. transplanted."

(*Daniel takes garden line and measures 1 ft. from row of lettuce, makes small holes every foot, transplants as he talks. Grabs and catches a beetle.*)

"Oh, see this beetle! it is the ground beetle, isn't it? Well, if I hadn't come to the garden, I shouldn't have known it, and should very likely have killed it. Now I know it is a friend that eats wire worms which destroy corn and other vegetables."

Garden Director: "Yes, he's a very useful little creature. We'll let him go now."

Daniel (*puts down beetle*): "See him run!"

Garden Director: "Why do you suppose he moves so quickly, while the June beetle goes so slowly?"

Daniel: "Why, his food is animal, so he has to move lively to catch it. The June beetle eats vegetable, so does n't have to hurry."

Garden Director: "That's just the reason."

Daniel (*finishes transplanting his first head of lettuce. Looks at tomatoes*). "Miss Hill, what kind of insects are these on the tomato plants? They jump like everything."

Garden Director (*examining leaves*): "These are flea beetles. We must put on some lime. What kind of mouth parts do they have, if they are beetles?"

Daniel (*thinking a moment*): "Biting mouth parts."

Garden Director: "Would you put on something to choke them or something for them to eat?"

Daniel: "Something to eat, like lime, Paris green, or Bug Death."

Garden Director: "What did we use to kill the aphids on the lettuce?"

Daniel: "We used hot soap suds (*takes out a lettuce plant and examines it*) to choke them, as they have sucking mouth parts, and it *has* killed them as there are none on it now." (*Puts lettuce into ground.*)

Garden Director: "So it has. Pat the earth round them good and hard."

(*Daniel takes another to transplant.*)

Garden Director: "I am going to give you a regular examination to-day. Now tell me about fertilizers. Why do we use them?"

Daniel: "Because there are certain foods plants cannot easily get from the soil."

Garden Director: "Yes, and some soil has n't the proper food, so we have to supply it. Let us go straight through the garden, and see what each plant needs." (*Both look at sunflowers.*)

Daniel: "Sunflowers need nitrogen for the growth of leaves and stem. Corn, nitrogen for quick stocky growth, and potash and phosphorus for the maturity and growth of fruit. Tomato plants also need potash and phosphorus for the growth of fruit."

Garden Director: "How did you raise these tomato plants?"

Daniel: "I planted the seed in the house in March, in a twelve-inch square box, in two inches of rich soil. When a few inches high, I thinned them to three inches apart. They grew like everything, and I put them out the first of June."

Garden Director: "You raised some very nice plants. What kind of food do beans need?"

Daniel: "Phosphorus and potash for maturing fruit. Beets and radishes need potash for the growth of the roots, and lettuce needs nitrogen for the growth of the leaves." (*Transplants fourth plant.*)

Garden Director: "You remember that pretty well. How did we find what phosphates the land needed?"

Daniel: "By experimenting with pure fertilizers." (*Takes out fifth plant. Looking up.*) I saw a crow pulling corn this morning."

Garden Director: "I know the crows pull corn. What is the rhyme we say when we plant corn?"

Daniel: "One for the blackbird, one for the crow,
Two for the cutworm, and two to grow."

Garden Director: "How many are allowed for the crow?"

Daniel: "One."

Garden Director: "How many for the cutworm?"

Daniel: "Two."

Garden Director: "Which is worse, the crow or cutworms?"

Daniel: "Cutworm."

Garden Director: "The crow eats thousands of cutworms, so he is a friend as well as a foe."

Daniel (*putting in last head of lettuce*). "There! this is the last one."

Garden Director: "You've transplanted them very neatly. Next week you may take out all the radishes, and transplant three cabbages into their place. Why do you suppose we put cabbages in the place of radishes?"

Daniel: "I don't know."

Garden Director: "Because the second crop should be totally unlike the first. Cabbages are grown for their leaves, and need a different food from the radishes, which are grown for their roots. What shall we plant in place of beans?"

Daniel: "Might plant spinach, because spinach is grown for leaves, and beans for fruit, and use a different food."

Garden Director: "Yes, and do you remember that we inoculated the beans with nitrogen collecting bacteria, and nitrogen is what spinach needs? We will put in spinach seed today, two feet from the beets, cover thinly, and pat down well."

(*Daniel measures two feet from beets, takes line, stretches it, steps on it so that the row may be straight, puts in the seed, and covers about one-half inch.*)

Garden Director: "Later, turnips may take the place of lettuce, as they need different food. That will give a good rotation of crops."

(*Daniel picks up tools.*)

Garden Director: "The judges were in the garden yesterday. They say your garden is all right; that it shows care, neatness, and a good knowledge of gardening."

Daniel: "Well, I'm glad they like it, but I'm not working for a prize, but because I like to have a little garden of my own."

Garden Director: "That's the true garden spirit. You've done well today. Don't forget to clean your tools. Good-bye, Daniel."

Daniel (*doffing hat*): "Good-bye, Miss Hill."

Exit.

Report of the Cobbet School Garden, Lynn, Mass.

BY PHILIP EMERSON, PRINCIPAL.

First Prize, 1905.

We herein make report upon the Cobbet School gardens for the year 1905 now drawing to a close ; and we are happy that we can report notable advances in the development of our plans. Photographs of the garden and papers illustrating the relation of the gardens to ordinary school work accompany the report.

The garden continues to expand. The past spring the last of the two hundred dollars' worth of soil was placed in generously deep trenches along remaining borders of the yards. The great pile of stones, gravel, and ashes excavated by the boys to make room for soil is soon to be removed by the city. This autumn the garden has spread beyond the school bounds. A large propagating bed for hardy perennial flowering plants has been made and planted in one neighbor's yard next the boys' playground, while an eighth-acre of sod in the yard adjoining the girls' playground is about to be manured and ploughed for use in individual plots next spring.

Training in garden work continues to broaden until it is now active at all seasons. During the past summer the garden was thoroughly cultivated and weeded throughout the vacation season under the principal's immediate supervision. Seeds have been planted during every month from April to October and every bed has been constantly occupied. The harvest commenced in May and will not be fully marketed until December. When the season opened a two-sash cold frame was in use. This September the School Committee built the frames for ten more sash, while the sash themselves were bought with receipts from the sale of school garden products. The frames are now full of seedlings of hardy perennials (over sixty varieties) and of salad crops that will mature at Christmas. In the school basement a mushroom bed is being started under the guidance of a successful amateur and this will continue the harvest until slips and seedlings for another year's gardens fill the class room windows.

Our school gardens are respected as never before. Hostile criticism has ceased and the interest and approval of citizens is more marked. Moreover, while many flowers and vegetables were stolen last year, there have been almost no depredations during the present season, although the products have been more tempting. Past perseverance has been rewarded and the value of patient continuance in well doing has been effectively taught the pupils.

HARDY PERENNIALS: COBBETT SCHOOL GARDEN.

The school garden plant is becoming a paying investment from a monetary standpoint as well as educationally. During the three years preceding this we have solicited gifts of money, tools, plants, and seeds, and have incurred a heavy debt for soil. This year we have paid for supplies costing over thirty dollars with receipts from the sale of garden products at ordinary market prices, and plan to apply a considerable balance toward cancelling our debt for soil. Last year some three dollars was received from the incidental sale of products; the sales of hardy plants, bulbs, cutflowers, and vegetables this season bid fair to amount to nearly fifty dollars although the sales are still distinctly incidental to the main educational purpose of the gardens. We believe it to be clearly desirable that a school garden should become self-supporting in order that it may give the broadest and most practical training to the pupils.

Progress has been made in every department of the garden. A brief account follows of the several phases of our work: typical beds of vegetables and herbs, large plots of native plants, beds for bulbs and annual flowers, a space for commercial plants for geographical specimens, vines for school decoration, an "old-fashioned" garden of hardy perennials, and cold frames and beds for multiplying plants for prize distribution and sale in our city.

Every one of the seventeen classes was given the care of one or more plots this spring. Unabated enthusiasm in spading, manuring, and seeding was shown. Indeed, the soil of many beds was sifted this year in the desire of every group of boys and girls to do as thorough work as their fellows could. When harvests commenced there was keen rivalry to purchase portions of the products, and fancy prices might have been secured had we thought it wise. A great variety of vegetables has been raised that the children may come to know them and the culture they need. We have sold several kinds of lettuce and radishes; string, shell, and lima beans; tomatoes and strawberry tomatoes; Swiss chard and peppergrass; sage and other herbs; sweet corn, potatoes, beets, kohlrabi, onions and scullions; curled chervil, squashes, and rhubarb. Turnips, parsnips, salsify, and carrots are now ready to be harvested and sold. Spinach, kale, endive and corn salad are still growing thriftily in open beds and cold frames. There have been a few failures: the crop of cabbages, Brussels sprouts, and cauliflower is much inferior to that of last year because the bed they are growing in is shaded by a tree and its moisture and fertility are sapped by tree roots this season. Only one of the dwarf sieva beans germinated; okra was planted too late for a good crop; a second planting of sweet corn did not quite attain maturity before severe frosts came. The strawberry bed and the row of bush fruits are now thriving. Somewhat less space has been given to vegetables than last year, but more varied and better products have been raised.

The garden of native plants has been maintained and its development along established lines continued. We find that the sunken tubs for

swamp and pond plants serve to keep the soil about them moist also. Such shrubs as willows and button bush have been planted near them, along with moisture-loving herbs and sedges. In one tub there is a clump of cat-o-nine-tails and tall bog rushes, with the lance-leaved white violet, marsh marigold and like flowers growing luxuriantly about its base. Some of the plants that are not native to Lynn which were added last year, like the mandrake and twisted stalk, are doing well, and a handsome western rudbeckia is spreading like a weed near the little pond. The new bed devoted to ferns is being gradually developed with special care that soil and drainage be right. Press of other garden work still precludes the accurate mapping of the wild garden beds with their nearly three hundred native species of shrubs, vines, herbs, grasses, sedges, and ferns. This year seeds of some of the more desirable native plants have been collected and a number of species are being raised from seed. It is planned to train the children thereby so that they may both grow native plants in home gardens and so that they shall lovingly protect flowers in their native haunts.

Two beds were again devoted to spring flowering bulbs and to annuals. These give opportunity to train pupils in the proper care of the flowers most commonly used in home gardens. Some twenty annuals were grown this year. Another bed was once more used for the grains, fiber plants, and the like. Exhibits from these beds were awarded first prizes by the Houghton Horticultural Society. We plan another year to grow many named varieties of one or two annuals, to impress upon the children the possibilities in this direction. Similarly the bed used for a variety of commercial plants hitherto, will be planted with a large range of the more important fodder crops. The vines on the south wall of the schoolhouse have been protected so that they are now mounting rapidly toward the eaves. Deep emplacements of soil have been made along the street front of the buildings, and vines are being raised from seed to be set out another spring.

The most marked advance of the present year has been in the department of hardy perennial flowering plants. In the spring one large bed was devoted to divisions and seedlings, and this work has been greatly extended as the season progressed. It is our aim to propagate hardy plants for distribution as prizes to the children having successful home gardens; for exchange with amateurs and with nurserymen that the variety of hardy plants in the school garden may be increased; and for sale to the citizens, both for the support of the school garden work and for the beautifying of the home grounds of the city. To further the latter purpose a catalogue of the hardy plants ready for sale was prepared by the use of illustrations and descriptions cut from trade catalogues. We have been too busy to press sales or even to circulate the catalogue thus far this autumn, but one sale of ten dollars' worth of plants has been made and others for smaller amounts. We believe a large field of civic usefulness

is open to a school garden in this line. Our catalogue accompanies this report and details the scope of our plans, their method and purposes.

The quality of our work is attested by the exchanges we have readily arranged, not only with citizens who have fine gardens, but also with professional gardeners and nurserymen. Mr. Goodwin, the florist, whose greenhouses adjoin the school yard noticed the Helenium and Boltonia in our propagating bed and asked that he might purchase several clumps of each sort. Two clumps of *Pulmonaria saccharata maculata* were formed by division in the spring, and this fall they were exchanged at the well-known Reading Nurseries for ten species of hardy plants to the catalogue value of $1.50.

While some spaces in the hardy garden were filled this year with gladioli, montbretias, tigridias and like bulbs, these will have to be placed in another bed next spring, their places being taken by a variety of hardy plants. Not only are new hardy plants being introduced to fill vacant places, inferior varieties are being removed to make space for the best obtainable forms. For example, most of our clumps of phlox were old-fashioned varieties from Lynn gardens, vigorous plants but of sober colors. By purchase and exchange we have secured the best to replace them and have also started over fifty clumps of five sorts in our new nursery bed. The old clumps have been divided and have been awarded to pupils in the district where gardens are few and where the hardiest of plants are necessary for the best results. Similarly some fifty clumps of bulbs of the ordinary show and pompon dahlias will be divided another spring for use in the same district. Some of the finest cactus, fancy, and decorative varieties have been secured to replace them. In time the superior varieties now being introduced in all lines will be ready for prize distribution in their turn. We here wish to acknowledge a generous gift of canna and iris bulbs from the Hunnewell estate, Wellesley, through the gardener, Mr. T. D. Hatfield.

The school garden not only supplies plants for home gardens but stimulates and trains the pupils to plant individual gardens and to improve their home grounds. As last year, many dollars' worth of seeds were purchased for the children in cent packages, and we have commenced the policy of buying the most popular sorts in pound lots and retailing them at cost in quantities to suit the children. During the present week the children of the building, over eight hundred in number, have written stories of their home gardens for the year; and if the committee desires I will forward all or a selection of hundreds or dozens of papers to you. As an example of this work, which is really part and parcel of the school garden plans, I record the effort toward home yard improvement of two little boys who were in our school last spring but are now in the next ward. Their parents were born "within the pale" in Russian Poland and their home is in a dreary, cheerless building in a poor quarter, while the little back yard, strewn with stones, broken glass and tins about a dilapidated outhouse

would have discouraged most adults from any attempt at a garden. The boys got a sieve, sifted all the dirt and removed the coarse waste, just as some classes were doing at school with the stones in the soil of their plots. Sweet corn was planted, with flowering vines to clamber over the rough board fence and the shed. A rude fence was built to protect the bit of garden. Despite all discouragements a good crop of corn was raised that greatly pleased their parents, and the flowers were still in bloom when the writer visited the home in October. Such results pay. The report of Joseph Perkins to your committee in the children's garden competition, and that of Arthur Richardson enclosed herewith show the results of three years of school garden work as reproduced in the gardens of two ninth grade boys at their summer homes. Master Richardson sent the principal in September a basket containing remarkably fine specimens of a dozen sorts of vegetables that proved truly excellent on the table.

The school garden is closely related to class room work in many ways, as illustrated by the drawings and written work of all grades and classes which we send you herewith. Thereby the school garden is enabled to reproduce itself in hundreds of children's gardens. Last year a definite series of lessons on garden soils was worked out with experiments, teaching, and text. This was reviewed the present season, and was followed by garden instruction and texts on the common root crops, evidence of which will be noted in the written work herewith. Several classes undertook a special study of weeds also. Our reports in previous years outline in some detail the relations of garden work to the course of study, so that no further statement is needed here. This autumn, however, a new step has been taken in advance. The girls of the eighth grade take cooking one session a fortnight. During these periods groups of boys from the same grade are regularly taken by the principal for systematic instruction in gardening. The work comprises class room instruction, experiments with plants, all forms of work with plants in the gardens, care of plants in the schoolhouse and cold frames, readings on gardening, related written work and drawing; and every boy is expected to carry on gardening at his home that shall parallel and apply the work and instruction taken at school.

Finally the Cobbet School gardens have proved their merit by their influence upon the community. Among teachers and parents, as well as with the children, they have so renewed and increased interest in horticulture that a new enthusiasm and energy have been awakened in the Houghton Horticultural Society at Lynn. Its present increased membership, broadened work, and improved financial condition are measurably due to influences springing from the garden at the Cobbet School. To fulfill a duty to a yet larger public, an account of "The Evolution of a School Garden and Its Ideals" was prepared for publication and has been accepted by the editors of the New England Magazine for their columns.

October 28, 1905.

THE TOMATO CROP: CHILDREN'S GARDEN GROTON, MASS.

Report of the Mill Garden, Groton, Mass.

BY MISS ELIZABETH SEWALL HILL, DIRECTOR.

Second Prize, 1905.

The Mill Garden of Groton was started in 1904, under the auspices of the Groton Village Improvement Society. It is on private property loaned for the use of the children, and is prettily situated being bordered with pines and spruces. The lot is 180 by 42 feet and the soil is good and easily worked. The individual gardens are 42 by 12 feet accommodating fifteen workers from five to sixteen years of age.

The children have met twice a week with an instructor; Wednesdays after school and Saturdays, from May 1 to September 25. Gardening is their pastime and they wished they might meet every day in the week. They kept the ground so well weeded that it was difficult to find one all the summer through. Everything was learned by observation and jotted down in a notebook. An ant was seen rubbing off its wings; a hellgramite was caught and studied its life through; everything of interest, and that meant everything, was noticed with enthusiasm, studied, and talked about.

With the six dollars awarded last year by the Massachusetts Horticultural Society were bought a good wheelbarrow, six large iron rakes, and three sets of tools. The gardens were laid out by the children under the instruction of the director. Insects and birds were studied and beans were inoculated with the nitrogen bacteria sent out by the Department of Agriculture. The peanuts were more successful than last year although not a very tremendous crop has yet been raised.

An exhibition of the garden products, in connection with the other gardens of the town, was held at the Town Fair in the fall. Prizes have been given for the best gardens, the judges marking in accordance with the following points:

General condition,
Rows out to path,
Well-thinned vegetables,
Nothing wasted,
No weeds,
Behavior.

These children are ideal gardeners, not only in their work but in every other way. They are bright, well-behaved, and appreciate everything

that is done for them. The total product of the garden during the season was as follows:

Corn, 200.
Cucumbers, 30.
Squashes, 6 winter, 60 summer.
Pumpkins, 27.
Melons, 12.
Potatoes, 24 hills.
Tomatoes, 30 plants.
Beans, 30 quarts.
Peas, 50 quarts.
Peanuts, 45 plants.
Turnips, 3000.
Carrots, 3500.
Beets, 2500.
Radishes, 15,000.
Lettuce, 6000.
Beet greens, 50 pecks.
Turnip greens, 50 pecks.
Sweet alyssum, 180 feet.
Zinnias, 180 feet.
Cal. poppies, 180 feet.
Petunias, 180 feet.
Nasturtium, 180 feet.

Report of the Lincoln School Garden, Brookline, Mass.

BY MISS ELIZABETH SEWALL HILL, GARDEN DIRECTOR.

Third Prize, 1905.

The Lincoln School garden was started in 1903 by the Brookline Educational Society and in the present year was connected with the Lincoln School under the School Committee. It is situated on private property at the corner of Boylston and Cypress streets. It is not a desirable piece of land either in shape or in the character of the soil. It is deficient in nitrogen as was proved by the experiment with inoculated beans; no nodules being formed even then. It is, however, the nearest available plot to the school. The dimensions of this garden are 125 by 76 feet, divided into 68 lots, 15 by 5 feet.

Gardening was made a regular study and all work was done in school hours. During May and June at ten o'clock a class of about twenty boys was sent to the basement where the tools were hung in a row in sets of a hoe, rake, shovel, and trowel. They would take these and march up to the garden for one hour's work.

During the vacation many more children wanted gardens than could be accommodated and 167 different children worked in them although only one-half owned a garden.

Material for study in the class room was taken from the gardens, plants were potted and taken home, and some were placed in the school rooms. The dry weather for several weeks caused much anxiety and the soil was like powder. The seeds could not germinate but by constant working and watering they got through with very little harm.

There were many visitors to the gardens: parents, friends, teachers, and others especially interested in the work.

An exhibition of children's garden products was held in the hall of the school, most of the work of arrangement being done by the children themselves. Ten tables averaging fifteen feet in length were closely packed with the exhibits and if more tables had been available they would have been used to advantage. In two days about four hundred people inspected the exhibit. Thirty-two prizes consisting of new fifty and twenty-five cent pieces were awarded for the best flowers and vegetables, nine of which were won by children connected with the garden of the Lincoln School.

Report of the Sewall School Garden, Brookline, Mass.

BY MISS ELIZABETH SEWALL HILL, GARDEN DIRECTOR.

Honorary Mention, 1905.

In 1903 the Sewall School garden was started by the Brookline Educational Society but is now under the direction of the School Board, the town contributing about one-half of the cost of maintenance.

It is situated on private grounds opposite the school building and is 137 by 50 feet in size. It is flat, easy to lay out, and every child in the school, 168 in all, had a garden. In the garden season the teacher took her whole class out and helped in the planting.

At the garden exhibition these gardens received nine prizes; each child picked, arranged, and carried his own flowers and vegetables. Thousands of flowers were picked every day; some sent to sick friends; some to adorn the class room; and some to take home.

These children are always eager for their garden work and have been faithful, helpful, and well behaved. There was a great gain in good behavior in the schools this year and it was attributed by the teachers to the garden work.

Report of the Fairhaven School Gardens.

BY ANNA BAILEY TROWBRIDGE.

Honorary Mention, 1905.

The year 1905 brings to a close the most successful season in the history of the school gardens of Fairhaven, Massachusetts.

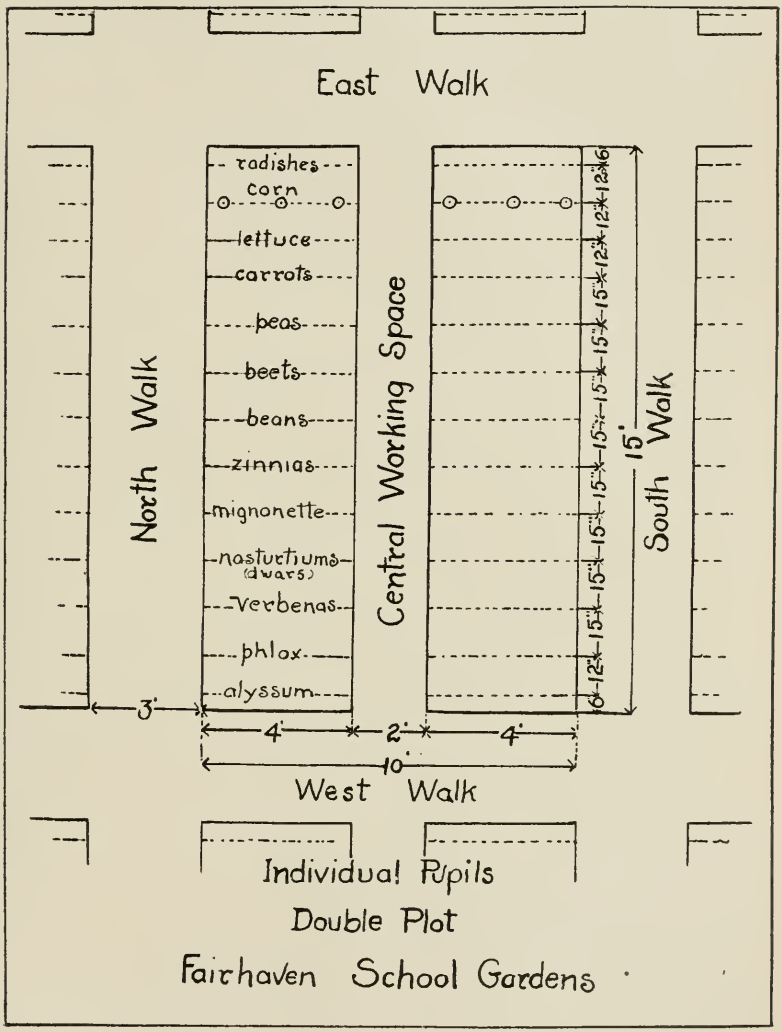
Established three years ago as an experiment, these gardens have now become a part of the education of the boys and girls in the sixth and seventh grammar grades; the increasing interest of the children with the attendant gratifying results seems to warrant the maintenance of this work as a permanent feature in the school curriculum of the future.

Some changes were made this season which tended to improve the conditions of the gardens as a whole. Each child was granted two plots of ground fifteen feet long by four feet wide, with a division between each bed two feet in width; this gave each boy and girl more soil to cultivate, with a double reward of vegetables and flowers over returns of previous seasons. Last year the luxuriant growth of flowers, as the summer advanced, rendered some of the paths quite impassable, so this season this difficulty was obviated by laying out all general paths three feet in width.

Early in the spring, after the ground had been ploughed and harrowed, the young gardeners staked off their lots and prepared the soil for the reception of the seed. The method of planting, by a rope, was the same as last year, and on the 10th of May the first row of boys and girls had finished depositing their seeds and were busy cleaning up the surroundings of their little plots. While these children had been occupied with their planting, the little tillers of the soil in the second and third rows had not been idle; gardens had been spaded, fertilized and raked, and eyes were eager to catch glimpses of a first radish leaf or blade of corn. On the 17th of May the last of the sixty beds was sown, and the first row of gardens showed signs of germination.

One half of each garden plot, as shown in the accompanying drawing, was devoted to such vegetables as corn, lettuce, peas, beans, beets, carrots and radishes, while the other half, as the season advanced, was aglow with nasturtiums (dwarf), zinnias, verbenas, phlox, ageratum, marigolds, sweet alyssum, etc.

The work on the gardens, as in the past, was carried on outside of school hours, so on Saturday mornings or after school at night, could be found a group of earnest workers, busy weeding, transplanting, hoeing or raking as conditions required. Through the summer vacation the little farms were visited regularly by their owners, tended carefully, and baskets of



PLAN OF SCHOOL GARDEN, FAIRHAVEN, MASS.

fresh vegetables were carried home, either to sell to numerous patrons, or to garnish the family table.

While friends have enjoyed the fragrance of the great variety of flowers, many an invalid's room has been brightened by the glow of a bunch of nasturtiums or stately zinnias.

Note books containing descriptions of how the children prepared the soil, method of planting, dates of sowing and harvesting have been diligently kept by the boys and girls. One little pupil writes, "On July 12, 1905, I took thirteen good sized heads of lettuce, seven turnips, about one quart of peas, and also picked a large bouquet of candytuft and bachelor's buttons." Other books relate similar experiences.

The native ferns, which were brought to the school gardens last spring, pushed out from the soil strong and vigorous this year, in spite of the sunny corner in which they were located. Partly to conceal the outlines of an old fence and partly to shade the fern corner some of the native shrubs, such as varieties of viburnum, common elder and others which the boys brought from the neighboring woods, were planted. This wild garden, which now contains nine varieties of our common ferns and a few shrubs, is at present only a nucleus which we hope will be added to as the years go on.

Throughout the entire season this garden spot has attracted many visitors — strangers as well as friends — whose words of commendation were expressed for the order, neatness, and regularity which prevailed, as well as for the beauty and luxuriance.

The true worth and value of these school gardens have been demonstrated perhaps, this year, more than ever before.

In the spring of 1905 the Fairhaven Improvement Society offered prizes to boys and girls who would maintain flower gardens at their homes during the summer months. As a result of this offer eighty little people entered the competition. Many of these children had been nature students in the school gardens and, with the knowledge and experience there gained, were enabled to better understand the best method and most artistic manner of beautifying the home grounds, and whatever adds to the attractiveness of home environment tends to make each and every community a "Village Beautiful."

Thus the influence of the Fairhaven school gardens has already become far reaching.

Children's Home Garden Reports.

BY ROGER NEWTON PERRY, WORCESTER, MASS.

(11 years old.) First Prize, 1905.

My papa let me have a little land, 44 by 25 feet. He let me use the horse and plow to begin my garden. This was April 1.

Last fall the ground was covered with horse manure. I plowed this in, then took my spade, rake, and hoe and made the ground smooth. This took me a long time for I got tired after working a while.

I made me a hotbed out of an old window and frame, 2 by 3 feet, putting horse manure into it first and then dirt. Grandpa gave me my seeds.

April 22 I sowed cabbage, lettuce, and tomato seed in my hotbed. April 19 sowed sweet peas two inches deep, and radishes one-half inch. April 24 sowed Gradus peas two and one-half inches deep and two rows of beets one inch deep. April 29 planted corn, six kernels in a hill, and sowed parsley, parsnip, and turnip seeds two and one-half inches deep.

May 4 planted potatoes. I cut my potatoes leaving two eyes on a piece and planted one piece in a hill. May 15 set cabbage and lettuce raised in my hotbed and planted, in hills, my pole beans. I put a pole six feet high to each hill.

June 6 sold my radishes and thinned my beets. June 15 chickens got out and ate my lettuce up. Oh! but I was mad. June 29 ate first beet from my garden.

July 25 dug trench a foot deep, put in three inches manure, covered over four inches of dirt, and set in celery plants that grandpa gave me. I banked it with dirt to the leaves when it was six inches high; as fast as it grew I kept it banked.

My papa bought the cornstalks for the horses. I raised my vegetables to sell and not for exhibition. I have made $9.91 on my garden and put this money in the bank. I hope the others have done as well.

October 16, 1905,

ARTHUR F. RICHARDSON'S GARDEN, HAMILTON, MASS.

My Home Garden at Hamilton.

BY ARTHUR F. RICHARDSON, NINTH GRADE, COBBETT SCHOOL, LYNN.

Second Prize, 1905.

Last spring, on April 19, my father bought a cottage in the country. The first thing I did was to try to rid the long narrow strip we were to use as a garden of witch grass and stones. After hiring a man to plough, harrow, and furrow, I took the tufts that had been thrown one side, shook all the soil out, buried some deep and some I carried to another part of the grounds, leaving them upturned to rot. My father bought me a quarter of a cord of old stable manure which I put in each row or hill just before planting. Over this put a little soil, the seeds, more soil, and almost at the top, a little dry fertilizer.

About half way, I dug a trench taking out all the loam and gravel about three feet down, filled up the trench with the very numerous stones I took out, sifted ashes in between, and brought several wheelbarrow loads of gravel from a pit near by; making a fine solid walk through the centre of the garden.

May 1 I planted one row of low growing Excelsior peas that had been soaked an hour, using a line with a stick at either end so that the row would be straight. The following Saturday some were up, but not finding them thick enough to suit me I pushed down some more peas in the same row. Also planted lettuce, cucumbers, Black Wax, and Six Weeks beans.

I enriched and raked a long bed for the school flower seeds, beets, and lettuce. This bed I made very fine, working in the manure and fertilizer with my hands. Planted the seeds in short rows the width of a board apart. The board I also used to make my rows straight. Directly in front of the pump I planted sweet peas so that they might catch all the waste water. Several times during the summer I dug in wood ashes about the roots, producing a great quantity of flowers.

The beets, kohlrabi, and four kinds of tomato plants were given me. I was careful to dip their roots in water before transplanting using only the dry fertilizer for the tomatoes which I set about a foot and a half apart. I did not support them except with a hay mulch after the fruit began to turn. Some one suggested planting squashes in the center of each hill in the first row of corn, as there was a large empty field for them to run in. This proved wise, for we matured and ripened nineteen handsome squashes as well as had the usual amount of corn in that row.

I continued planting and hoeing for several Saturdays. It being my first garden I was determined no weeds should hurt the looks or take the

goodness from the soil, but at first it seemed as if witch grass and stones grew faster than crops. The small striped yellow bug that appeared on the cucumbers and squashes I powdered every morning early, with bug death. I found this made them grow as well. Cutworms troubled the peas and flowers. Those I hunted and killed.

In June an avalanche of rose bugs attacked us, doing great damage to everything. We picked them off by hundreds. After a few days they disappeared leaving the foliage of the beans a sorry sight. I made a mistake planting sunflowers with pole beans as the sunflowers took all the richness from the soil. July 1 we ate our first products of the garden, half a peck of peas, from then on every day we had some vegetables from the garden, picking the last string beans on October 1, from a late planting.

I used a coarse rake to hoe the peas with at first. When they reached maturity I pulled up the vines, spread them on top of the compost heap, turning it all frequently during the summer. The poorest land I used for the potatoes. Next year I shall plant less corn and more potatoes because they did well this year with so very little attention.

I shall also plant chard as soon as I pull up the pea vines.

BY FRANK E. GRIFFIN, AYER, MASS.

Third Prize, 1905.

My garden was 18 by 48 feet. First I had it plowed and then furrowed; then I fixed beds for the lettuce and turnips and put some fertilizer on the soil and mixed it in well; then I put four or five seeds in a hill or I scattered them along in the beds; then I raked the seeds into the soil and fertilizer. My beds and hills were about four or five inches above my paths.

I planted my garden on the 30th of May; being so dry it did n't come up until about three weeks after, and my cucumbers had to be planted again. I had a little difficulty in keeping the weeds out because they seemed to want to grow better then they should.

I had to transplant my lettuce, marigolds, and asters, and I also transplanted my poppies as I got the envelopes which the seeds were in mixed. I had five dozen of corn, twenty heads of lettuce, twenty-four cucumbers, one-half bushel turnips, and one bushel tomatoes.

My flowers did n't need much care except a little weeding and watering now and then. They were in the shade in the afternoon and got the morning sun.

October 28, 1905.

FRANK E. GRIFFIN'S GARDEN AYER, MASS.

BY JOSEPH MANNING PERKINS, LYNN, MASS.

(15 years of age.)

My garden is at Middleton, Mass. I go there every summer so I have a good chance to care for my garden. This year I kept a diary and put in it a full account of the work I did in my garden.

About the first of April I plowed the ground with a hand plow. Afterward I leveled it off with a rake, picked out all the stones and roots and made a stone border between the garden and the road.

I planted my peas, lettuce, radishes, and sage on April 8, 1905. I was careful not to plant them too thick or too deep. I watered the whole garden with the hose. In two weeks my peas were an inch high. On Saturday, May 6 our woods got afire and when the neighbors came to help put it out they walked over part of my garden. After the fire was out I hoed the earth around the peas and thinned the lettuce and radishes. Some of my radishes were ready to eat by May 20. My peas were ready to eat by the first of July and I had about a peck from my garden.

The limited space I could have prevented me from planting corn or potatoes. I had all the radishes and lettuce we could use. I had ninety-six healthy sage plants and they yielded sage enough to make twenty-five or thirty large bunches which I shall sell at Thanksgiving time at five cents a bunch.

My folks have promised me a larger garden next spring where I shall plant all kinds of vegetables.

October 28, 1905.

My Gardens.

BY FRANK A. WOODS, GROTON, MASS.

(Nine years of age.)

I want to tell you about my two gardens. My home garden is twenty feet long and fifteen feet wide. The rows are four feet long and eight inches apart; this is planted with flowers such as two kinds of golden glow, hardy phlox (pink and white), rosebushes, pansies, wallflowers, balsams, verbenas, asters, snapdragons, nasturtiums, morning glories, and a few geraniums. The remainder is planted with Boston marrow squashes of which I raised 350 pounds.

My school garden is twenty feet long and sixteen feet wide; this I had planted with radishes, parsnips, carrots, turnips, pumpkins, summer squashes, Hubbard squashes, muskmelons, watermelons, cucumbers, peas, pole beans, lettuce, onions, beets, and tomatoes. These rows are eight inches apart.

Prizes and Gratuities Awarded, 1905.

SCHOOL GARDENS.

Cobbett School, Lynn, Mass., first prize	$12 00
Mill Garden, Groton, Mass., second prize	10 00
Lincoln School, Brookline, Mass., third prize	8 00
Fairhaven Schools, Fairhaven, Mass., Honorary Mention	
Sewall School, Brookline, Mass., Honorary Mention.	

HOME GARDENS.

Roger N. Perry, Worcester, first prize	$5 00
Arthur F. Richardson, Lynn, second prize	4 00
Frank E. Griffin, Ayer, third prize	3 00
Henry L. Brown, Ayer, fourth prize	2 00
Joseph M. Perkins, Lynn, fifth prize	1 00
Harold H. Woods, Groton, sixth prize	1 00
Harold White, Reading, seventh prize	50
Harold Danforth, Reading, eighth prize	50
Frank A. Woods, Groton, ninth prize	50
John A. Loring, Reading, tenth prize	50

CHILDREN'S HERBARIUMS.

Ruth H. Bird, 24 flowering plants	$ 50
Edna F. Bowles, flowering plants	50
Lilla Brodie, 38 flowering plants	1 14
Edna Chaffin, flowering plants, leaf sprays, and ferns	8 30
Una Chaffin, flowering plants and ferns	5 75
Austin W. Cheever, flowering plants, grasses, and sedges	2 53
Ruth W. Fisher, flowering plants and ferns	3 85
M. Isabel Floyd, flowering plants	50
Helen E. James, flowering plants	1 32
Agnes Johnson, flowering plants	50
Lois A. Leavitt, flowering plants and ferns	3 55
Lincoln School, Brookline, collection of insects	1 00
Slanyd Markoe, ferns	95
Gladys A. Mason, flowering plants	3 85
Sewall School, Brookline, collection of garden weeds	50
Frances L. Webb, flowering plants	48
Irving N. Whittier, flowering plants	1 47
Barbara Williams, flowering plants	78
Louise F. Zirngiebel, ferns	2 10

NATIVE PLANTS AND FERNS.

April 29.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:
1st, Mrs. Arthur Clark, $5; 2d, Miss Isabelle C. Shattuck, $4.

June 3–4.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:
1st, Mrs. Arthur Clark, $5; 2d, Grade 8, Franklin School, East Weymouth, $4.

June 24–25.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:
1st, Miss Isabelle C. Shattuck, $5; 2d, Mrs. Arthur Clark, $4.

July 8–9.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:
1st, Miss Isabelle C. Shattuck, $5; 2d, Mrs. Arthur Clark, $4.

July 22.

NATIVE FERNS.— Collection of named species and varieties:
1st, Miss Isabelle C. Shattuck, $5; 2d, Chester C. Kingman, $4.
Gratuity:
Geo. E. Davenport, Display of ferns not entered for prize, $3.

August 12.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:
1st, Miss Isabelle C. Shattuck, $5; 2d, Chester C. Kingman, $4.

September 14–17.

NATIVE PLANTS.— Collection of 40 bottles of named species and varieties, one bottle of each:
1st, Chester C. Kingman, Reading, $5.

The amount appropriated for the committee during the year was $225.00 and the amount expended for prizes and gratuities, $149.57, leaving a balance of $75.43.

HENRY SAXTON ADAMS,
CHARLES W. JENKS,
W. E. C. RICH,
WM. P. RICH,
Miss MARY RODMAN,
Committee on School Gardens and Native Plants.

REPORT OF THE DELEGATE TO THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1905.

The work of the Board of Agriculture during the past year has been conducted with vigor and with seeming profit to the state.

The annual summer meeting was held at Lowell on the grounds of the Middlesex North Agricultural Society on Tuesday, July 25th, and an admirable programme was arranged by the Secretary of the Board. Prof. Waugh illustrated and explained the preparation of Bordeaux Mixture for the prevention of fungous diseases and also showed various kinds of fruit packages, explaining the advantages of each.

P. M. Harwood, agent of the Dairy Bureau, demonstrated the working of the Babcock tester, testing samples of milk that were brought to him for the purpose; he also explained the sanitary handling of milk and its importance. If the farmer is expected to carry out all the careful details which he suggested, the consumer being benefited should demand that the producer receive his just reward.

Mr. W. D. Rudd demonstrated the most approved modern methods of killing and preparing poultry for the Boston market.

Prof. Wm. H. Caldwell, Secretary of the American Guernsey Cattle Club, gave a running lecture on the points of a dairy cow and how to select one, illustrated from animals of the dairy and beef types that were before him.

This was followed by an address by Hon. N. J. Batchelder, Ex-Governor of New Hampshire, and several others.

At the close of the meeting, the Board and others in attendance were invited to visit the famous C. I. Hood farm to inspect its herds of Jersey cows and Berkshire pigs; all the arrangements of the stables are excellent and well worthy a visit.

The attendance at this meeting was very large. The usual crop reports have been published commencing with the month of May; special articles have been appended to these reports, as follows:

May. The management of Mowings, by Prof. Wm. P. Brooks, Amherst, Mass.

June. How to supplement a short Hay Crop, by Prof. Chs. S. Phelps, Sup't. Grassland Farms, Chapinville, Conn.

July. Bush Fruits, by Prof. Fred S. Card, Prof. of Horticulture, R. I. College of Agriculture and Mechanic Arts.

August. Poultry Housing, by John H. Robinson, Editor of Farm Poultry, Boston, Mass.

September. Swine Growing, by A. A. Southwick, Farm Sup't., State Insane Asylum, Taunton, Mass.

October. Clean Milk, by P. M. Harwood, Gen'l. Agent, State Dairy Bureau.

There have also been issued the following Nature Leaflets, with illustrations:

Leaflet 28. The Garden Toad, by A. H. Kirkland.
" 29. School Gardens.
" 30. Planting and care of the School Garden.
" 31. Crops for the School Garden.
" 32. Results of School Gardening.

These, from 29 to 32 inclusive, were by H. D. Hemenway, Director School of Horticulture, Hartford, Conn.

The public winter meeting of the Board was held at Worcester, December, 5, 6, 7, at Horticultural Hall. An excellent list of lectures was furnished, as follows:

Market Gardening, by Henry M. Howard, West Newton, was admirable, giving in careful detail this important branch of horticultural industry. He also emphasized the importance of strict accounts, keeping exact memoranda of expenses and profits, to determine what crops were most desirable to grow.

The Soil; importance of its character for the culture of fruit, by Geo. T. Powell, Pres't. of the Agricultural Experts Ass'n, New York City, was an excellent paper, and if its recommendations were followed, the apple crop would be greatly improved. The keynote of the paper was fertilization, and good cultivation to prevent off-years; the fertilization to keep up the high tone of the orchard, and add color to the fruit. In the course of his lecture he cited the case of an old orchard planted by his father, fifty-seven years ago. These trees were planted in sod and bearing crops

regularly in which was a large percentage of inferior fruit. For several years it has been under high tillage with crimson and red clover sown annually at the rate of fifteen lbs. seed to the acre, in June or early July, and ploughed in each spring, with the result that the soil has steadily improved, and the crops of 1904 and 1905 have never been excelled in quantity or quality and have never sold for so high value.

Agricultural or Technical Education by Dr. W. E. Stone, Pres't. Purdue University, Lafayette, Indiana.

Dairy Precept and Dairy Practice, by Dr. Joseph L. Hills, Director of Agricultural Experiment Station, Burlington, Vermont.

A campaign for Rural Progress, by Kenyon L. Butterfield, M. A., Pres't. R. I. College of Agriculture and Mechanic Arts, Kingston, R. I. The high reputation of the author is a guarantee of the excellence of this paper.

The relation of Nitrogen to fertility, by Dr. C. D. Woods, Director Agricultural Experiment Station, Orono, Maine. This was the closing lecture and of special interest to practical cultivators.

In the afternoon Mr. Chs. W. Wood invited the Board to visit his place, Crescent Farm, in Shrewsbury. Mr. Wood is President of the New England Holstein-Friesian Ass'n. In his large barn were seen fine specimens of this class of stock, which are very large producers of milk. Mr. Wood described his method of feeding and care of his stock, the appearance of which proved his success.

WILLIAM H. SPOONER,
Delegate.

December 30, 1905.

REPORT OF THE INSPECTOR TO THE STATE BOARD OF AGRICULTURE FOR THE YEAR 1905.

To the State Board of Agriculture,

GENTLEMEN:— I have endeavored to keep myself reasonably familiar with the affairs of the Massachusetts Horticultural Society during the year 1905, and feel sure that the management is deserving of praise for the excellent work that it has conducted in its efforts in behalf of bettering our horticulture, so far as the personal aims and money at command will allow.

The $600 bounty which the society has received from the State has certainly been put to uses of a high order. So much more money, received from endowments (not nearly as much as they could wisely handle) has been expended than the $600, upon excellent lines of awards by premiums, by medals, certificates of merit, many lectures, out-of-door exhibitions in practical forms of work, etc, etc., that I, as your Inspector, have only words of praise for the Massachusetts Horticultural Society.

Their hall exhibitions have been of varying size, as the management chose to have them, and they have been many. Some have filled their large and beautiful building, and have been of so exquisite an order that they must have proved a delight to many, at the same time that they were sources of much instruction to those who go there to learn.

The society's library and its handsome surroundings have both been improved during the past year.

The liberality and energy of their president has been marked, and happily he is just reëlected for the coming year.

Every encouragement that this Board can give to the Massachusetts Horticultural Society will be deserved.

Respectfully submitted,

FRANCIS HENRY APPLETON,
Inspector.

29, November 1905.

REPORT OF THE COMMITTEE ON LECTURES AND PUBLICATIONS FOR THE YEAR 1905.

BY J. WOODWARD MANNING, CHAIRMAN.

The following lectures were given during the year:

January 14. Some Recently Introduced Weeds. By Merritt L. Fernald of Cambridge, Mass.

January 21. Forest Planting for Profit in Massachusetts. By Theodore F. Borst of Boston, Mass.

January 28. General Discussion on Fruit. Opened by E. W. Wood of West Newton, Mass.

February 4. Findings of an orchard Survey in Western New York, with Stereopticon illustrations. By Prof. John Craig, Ithaca, N. Y.

February 11. Dwarf Fruit Trees: their uses, propagation, and management. By Prof. F. A. Waugh, Amherst, Mass.

February 18. Bacteria as Fertilizers, with Stereopticon Illustrations. By Dr. George T. Moore, Washington, D. C.

February 25. General Discussion on Flowers. Opened by J. Woodward Manning of Reading, Mass.

March 4. Some Aspects of Hardy Flower Culture. By A. Herrington of Madison, N. J.

March 11. The Return to Nature. By Miss Maud Summers of Cambridge, Mass.

March 18. General Discussion on Vegetables. Opened by W. W. Rawson of Arlington, Mass.

During these lectures the attendance has noticeably increased and on the occasion of Dr. Geo. T. Moore's address the capacity of the Lecture Hall was taxed to its limits. The inauguration of a series of Discussions seemed to meet with approval and renewed interest, and your committee has felt justified in extending this factor in the programme of lectures for the ensuing year.

Your committee further reports the publication of part II of the Transactions of the Society for 1904 and part I for 1905; the schedule of Prizes for the year 1906; and a preliminary Schedule sent out in advance of the regular Schedule of Prizes to enable competitors to make proper preparation for the earlier exhibitions of the year. The Report of the Committee on School Gardens has been in large demand during the year and this has been met by the issuance of separates of this report.

Respectfully submitted,

J. Woodward Manning,
James H. Bowditch,
John A. Pettigrew,
Edward B. Wilder,
E. W. Wood,
} *Committee.*

REPORT OF THE SECRETARY AND LIBRARIAN FOR THE YEAR 1905.

The Secretary and Librarian respectfully presents the following report for the year 1905:

The broadening of interest in the exhibitions of the Society on the part of the commercial growers and of the various associations devoted to special lines of floricultural productions has been a noteworthy feature of the work of the last two years. All of these have received a cordial welcome and their coöperation has been greatly appreciated.

The Society should be broad enough in its aims to include all who are engaged in the work of extending and developing the horticultural education of the community. It should give the hand of fellowship to the amateur, the professional, and the commercial elements, all of whom should find in our halls a generous encouragement.

While the "Flower Show" still continues to be our leading method for the advancement of horticulture in the community and is probably as potent an influence in sustaining this interest as any that at present can be devised, it may be, in order to maintain the leadership of the Society in horticultural matters, that some additional features of a practical nature may well be adopted in the new years which await us.

In no period of our history has there been a wider interest in general horticulture than at present and the inclination towards the rural and suburban life is very pronounced. In the moulding of this tendency the horticultural societies of the country have been a strong factor and, perhaps, in this direction their influence can be still further increased.

In accordance with the vote of the Society at the annual meeting of 1904 an amendment to the Charter was approved by the Legislature of the State in February. This amendment authorizes the

Society to choose its Treasurer and Secretary in such manner as its By-laws may from time to time provide.

In the early years of the Society these two offices were elective, but from the year 1876 until 1903, by a doubtful interpretation of the Charter, they were filled by appointment by the executive management. This latter method having been declared by eminent counsel as contrary to the requirement of the Charter it was necessary in framing the new By-laws of 1904 to return to the former usage until the Charter could be so amended as to allow of the appointment of the Treasurer and Secretary by the Board of Trustees.

This change in the Charter necessitated several amendments to the By-laws which were approved by the Society at the last annual meeting, together with an amendment authorizing the Board of Trustees to appropriate an amount sufficient to cover the annual appropriations for prizes and gratuities.

The publications for the year and the dates of issue are as follows:

February 3. Schedule of Prizes and Exhibitions, 56 pages.

October 18. Transactions, 1905, Part I, pages 1–105.

November 3. Transaction, 1904, Part II, pages 203–374 and plates 15–23.

By the John C. Chaffin bequest, received the present year, the income of $1000.00 will be annually devoted to the furtherance of his special interest in roses.

The many miscellaneous inquiries for information on horticultural subjects have received the interested attention of the Secretary and have been answered to the best of his ability. In this connection the Secretary is pleased to acknowledge the assistance received from the chairmen and members of the various committees of the Society as well as from its valuable library.

The Library.

At the suggestion of the Library Committee especial attention has been given during the present year to the arrangement of further exchanges of publications with horticultural societies and scienti-

fic and educational institutions of this country and of Europe. Continued effort also has been made to secure by purchase complete sets of such horticultural periodicals as may yet be wanting in the library.

The result has been satisfactory and encourages further endeavor in this direction. The following foreign and American periodical publications have been added during the year:

Annales de la Société horticole, vigneronne, et forestière de l' Aube, Années 1866–1904.

Annales de la Société d' Horticulture de la Haute Garonne. Volumes 47–51, 1900–1904.

Bulletin de la Société d' Horticulture et de Viticulture d' Epernay. Volumes 1–31, 1873–1904.

Bulletin de la Société d' Horticulture de Genève. 1903–1905.

L' Horticulture Moderne. Bourg-La-Reine, 1905.

The Journal of the Board of Agriculture. London. Volume 12, 1905.

Rosen Zeitung. Volumes 1–19. 1886–1904.

Möllers Deutsche Gärtner-Zeitung. Volumes 1–15, 1886–1900.

The Farmers' Register. Richmond and Petersburg, Va. Volumes 1–10, 1833–1842.

In June an exchange of duplicate material with the Library of the University of Wisconsin resulted in the acquisition of 63 annual reports of horticultural and agricultural societies and 54 miscellaneous volumes and pamphlets. All were desirable additions to the library, many of them being early reports now difficult to obtain, and fill many gaps in our collection.

A hundred or more miscellaneous volumes which have been laid aside for a number of years by reason of damage, incompleteness, or awaiting additional parts have been repaired, completed, and bound as far as practicable, and all restored to the library shelves.

An unusually large proportion of the Library Appropriation has been devoted this year to binding, so that all current periodicals are now bound up to date.

The number of accessions including bound volumes and pamphlets has been 1236; rather more than the average of recent years. Progress has been made in the reclassification of the library and a

new system of arrangement adopted which it is hoped to complete in the ensuing year.

By the continued liberality of the publishers of the various horticultural periodicals and agricultural papers our reading tables are kept well supplied and these privileges are made use of to a considerable extent by our members.

Other noteworthy gifts to the library during the year have been made by the following named persons whose generous interest is greatly appreciated.

February 7 Nathaniel T. Kidder, Esq. presented a case of books and pamphlets. Of especial interest in the lot were J. A. Barral, Dictionnaire d' Agriculture in four volumes, 1886–1892, and Chalvin et Compagnie's Catalogue. Grenoble, 1789. Many of the others are valuable as duplicates.

August 15 Hon. Aaron Low presented a large number of agricultural and experiment station reports and bulletins among which were found several important additions.

October 7 a gift to the library of $50.00 was received from Miss Caroline L. W. French to be expended for books.

In December five handsome oak reading tables for the alcoves of the library were presented by the same prominent and interested member of the Society whose gift last year was so acceptable. We wish he had permitted his name to be mentioned in this connection.

The library is undoubtedly the largest and most valuable collection of horticulture literature in America, but there are yet many deficiencies to be filled which will require the continued liberal support of the Society.

William P. Rich,
Secretary and Librarian.

REPORT OF THE TREASURER FOR THE YEAR 1905.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1905.*

DR.

To amount paid Sundries charged to Real Estate					$901 17
" " " for Exhibition Ware					180 60
" " " " Library, appropriated by Society		$400 00			
" " " from Income of John S. Farlow Fund		93 17			
" " " " Income of J. D. Williams French Fund		255 18			
					748 35
" " " for Interest on funds for prizes and other funds credited opposite					2,101 61
" " " " Heating		1,636 56			
" " " " Lighting		1,331 29			
" " " " Water Rates		29 40			
" " " " Labor		1,872 65			
" " " " Stationery, Printing and Postage		1,587 83			
" " " " Insurance		148 19			
" " " " Incidentals		512 80			
" " " " Repairs		623 48			
" " " " Committee on Lectures and Publications		210 00			
" " " " Salaries, Treasurer, Secretary and Assistants		3,712 00			
" " " " Salaries Committee on Plants and Flowers		346 00			
" " " " Salaries Committee on Fruits		138 95			
" " " " Salaries Committee on Vegetables		192 00			
" " " " Salaries Committee on Prizes		250 00			
" " " " Tax on Real Estate, South Boston		150 40			
" " " " Electric Power		43 68			12,785 23

For *Prizes awarded in 1904*, viz.

Prizes for Plants and Flowers	3,470 00	
" " Fruit	958 00	
" " Vegetables	904 92	
" " Gardens and Greenhouses	310 00	
" " School Gardens and Native Plants	225 00	
H. H. Hunnewell, Prizes for Rhododendrons	105 00	
Miss Sarah B. Fay Special Prize	50 00	
Gardeners' and Florists' Club " "	40 00	
M. A. Patten " "	10 00	
Peter Fisher " "	10 00	
William Nicholson " "	10 00	
		6,092 92
		22,809 88
Balance of Cash December 30th, 1905		12,992 90
		$35,802 78

Cr.

By Balance of account rendered December 30, 1904			$12,388 80
" Received from Building use of Halls		1,248 29	
" " " Annual Exhibitions	$2,247 50		
Less Expenses,	1,105 38		
		1,142 12	
" " " Admissions and Assessments		1,810 00	
" " " Mount Auburn Cemetery		1,918 24	
" " " State Bounty		600 00	
" " " Sales of Transactions		17 00	
" " " Interest on Bonds	$9,665 00		
" " " " " Stock	1,200 00		
" " " " " Bank Balances,	210 72		
		11,075 72	
" " " Executor of J. C. Chaffin, Estate for prizes		1,000 00	
" " " Chicago, Burlington and Quincy R. R. Co. for Matured Bond		1,000 00	
" " " Sale of 150 rights General Electric Stock		1,336 00	
Amounts carried forward		$21,147 37	$12,388 80

Amounts brought forward		$21,147 37	$12,388 80
" " " Miss Caroline L. W. French, for Books		50 00	
" " " Mrs. Anna C. Ames, for Special Prize		65 00	
" " " Boston Co-operative Flower Market			
" " " Music Hall Place, for Special Prize		40 00	
" " " Peter Fisher, for Special Prize		10 00	
" Interest credited funds charged opposite			
Samuel Appleton	Fund . $50 00		
John A. Lowell	" . 50 00		
Theodore Lyman	" . 550 00		
Josiah Bradlee	" . 50 00		
Benjamin V. French	" . 25 00		
H. H. Hunnewell	" . 200 00		
W. J. Walker	" . 117 72		
Levi Whitcomb	" . 25 00		
Benjamin B. Davis	" . 25 00		
Marshall P. Wilder	" . 50 00		
John Lewis Russell	" . 50 00		
Francis Brown Hayes	" . 500 00		
Henry A. Gane	" . 50 00		
John S. Farlow	" . 100 00		
J. D. Williams French	" . 200 00		
Benjamin H. Pierce	" . 32 00		
John C. Chaffin	" . 26 89		
		2,101 61	
			23,413 98
			$35,802 78

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL,
GEORGE F. FABYAN,
ARTHUR F. ESTABROOK,
} *Finance Committee.*

Assets.

Real Estate	$517,882 03	
Furniture and Exhibition Ware	9,537 51	
Library	43,232 98	
Stereotype Plates and Copies of History	243 50	
2,000, Kansas City, Clinton & Springfield R. R. Bonds	1,980 00	
10,000, Lake Shore & Michigan Southern R R. Bonds	10,415 25	
21,000, City of Newton, Bonds	24,228 75	
50,000, Atchison, Topeka & Santa Fe R. R. bonds	44,693 25	
50,000, Chicago, Burlington & Quincy, "Nebraska Extension" R. R. Bonds	50,012 50	
10,000, Chicago & West Michigan R. R. Bonds	9,987 50	
25,000, Kansas City, Fort Scott & Memphis Consols	27,523 75	
50,000, Chicago, Burlington & Quincy, "Illinois Division" R. R. Bonds	51,625 00	
8,000, Boston & Maine R. R. Bonds	8,710 00	
5,000, West End Street Railway Bonds	5,162 50	
150 Shares, General Electric Co, Stock	9,680 70	
W. A. Hayes & A. P. Loring, Trustees	3,488 76	
Cash	12,992 90	
		$831,396 88

Liabilities.

Samuel Appleton	Fund,	$1,000 00
John A. Lowell	"	1,000 00
Theodore Lyman	"	11,000 00
Josiah Bradlee	"	1,000 00
Benjamin V. French	"	500 00
H. H. Hunnewell	"	4,000 00
W. J. Walker	"	2,354 43
Levi W. Whitcomb	"	500 00
Amounts carried forward		$21,354 43

Amounts brought forward		$21,354 43		
Benjamin B. Davis	"	500 00		
Marshall P. Wilder	"	1,000 00		
John Lewis Russell	"	1,000 00		
Francis Brown Hayes	"	10,000 00		
Henry A. Gane	"	1,050 00		
John S. Farlow	"	2,506 88		
J. D. Williams French	"	5,088 97		
Benjamin H. Pierce	"	800 00		
John C. Chaffin	"	1,026 89		
			$44,327 17	
Prizes Awarded in 1905, Payable in 1906			6,506 00	
Gift of Miss Caroline L. W. French for books			50 00	
Mrs. Anna C. Ames, Special Prize			65 00	
Boston Co-operative Flower Market				
Music Hall Place, Special Prize			40 00	
Gardeners' & Florists' Club, Special Prize			10 00	
				50,998 17
Surplus				780,398 71
				$831,396 88

CHARLES E. RICHARDSON,
Treasurer.

MEMBERSHIP OF MASSACHUSETTS HORTICULTURAL SOCIETY,
DECEMBER 30th, 1905.

Life Membership per last report	674		
Added in 1905	45		
Commuted from Annual	1		
	—	720	
Deceased	20		
		—	700
Annual members per last report	173		
Added in 1905	10		
Reinstated	2		
	—	185	
Resigned	1		
Commuted to Life	1		
Dropped for nonpayment of assessment for two years	3		
Deceased	7		
	—	12	
		—	173
Present membership			873

Income from Membership.

45 New Life Members @ $30	1,350 00
1 Commuted to Life @ $20	20 00
10 New Annual Members @ $10	100 00
2 Reinstated @ $4	8 00
Assessments	332 00
	$1,810 00

Charles E. Richardson,
Treasurer.

Auditor's Certificate.

28 State Street, Boston, March 30th, 1906.

To the Finance Committee of the
Massachusetts Horticultural Society,

Gentlemen: — In compliance with your request I have made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1905, and herewith submit to you my report of the same.

Report.

I proved the correctness of the ledger, journal, and cash book and the small books tributary to the cash book, and saw that all balances were correctly carried forward. I examined and checked the vouchers and warrants representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1905, to have been on hand, and also examined the securities of the Society and found that they were in all details in accordance with the requirements of the records. I traced all postings from the journal and cash book into the ledger and certify that the balance sheet taken from the ledger as of the 31st day of December, 1905, is a correct abstract and that the Treasurer's statement of the assets and liabilities of the Society upon said date is true to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that the books and papers of the Society were in their usual excellent condition.

Yours very respectfully,

Andrew Stewart,
Examiner of Accounts.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1905.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1905. The Horticultural Society being charged with their proportion of same:			
Glen Avenue.			
169.2 days, man	$380 71		
65.9 days, man and horse	247 12		
12. days, man and two horses	63 00		
	$690 83		
One-fourth of $690.83 is		$ 172 70	
Balance due Mass. Horticultural Society		1,918 24	
		$2,090 94	
By Sales in January			$ 564 75
" " " February			10 00
" " " March			1,280 00
" " " April			265 00
" " " May			820 00
" " " June			10 00
" " " July			1,252 65
" " " August			380 00
" " " September			30 00
" " " October			2,395 00
" " " November			1,131 60
" " " December			345 00
			8,484 00
Net amount received from Receiving Tomb			1,279 75
			9,763 75
Deduct for Annual Expenses			1,400 00
One-fourth of			8,363 75
			$2,090 94

E. and O. E.
Boston, December 31st, 1905.

John L. Dill, *Treasurer.*

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31, 1905. The Massachusetts Horticultural Society being charged for its proportion of same.

Glen Avenue.

169.2 days, man	$380 71	
65.9 days, man and horse	247 12	
12 days, man and two horses	63 00	
	$690 83	
One-fourth of $690 83 is		$172 70

JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 30th, 1905.

I certify the foregoing to be a true copy of improvements for the year 1905 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

THE ANNUAL MEETING, NOVEMBER 18, 1905.

ANNUAL MEETING FOR THE YEAR 1905.

The Annual Meeting of the Massachusetts Horticultural Society for the year 1905 was held at Horticultural Hall, Boston, on Saturday, November 18, at twelve o'clock, noon.

The meeting was called in accordance with the By-laws for the transaction of business and for the election of officers, namely: a President, a Vice-President, a Treasurer, a Secretary, a Delegate to the State Board of Agriculture, a Trustee for two years, four Trustees for three years, and a Nominating Committee. Also several amendments to the By-laws were to be voted upon by the Society. A printed notice of the meeting had been mailed to the address of every member of the Society as it appeared upon the records of the Secretary.

President Estabrook presided and there were thirty members present at the opening of the meeting.

The President appointed Edward B. Wilder, J. Allen Crosby, and William P. Rich a committee to receive, assort, and count the ballots, and to report the number. He then announced the polls open until four o'clock.

The record of the Annual Meeting, November 19, 1904, was read and approved.

The President presented a recommendation from the Board of Trustees for the appropriation of $6700.00 for prizes and gratuities for the year 1906. The recommendation was unanimously adopted.

The following named gentlemen, recommended by the Board of Trustees, were elected Corresponding Members of the Society:

M. Maurice L. de Vilmorin, Paris, France,
M. Philippe L. de Vilmorin, Paris, France,
Mr. James Herbert Veitch, Chelsea, England,
all proposed by Professor Charles S. Sargent.

The President appointed William H. Spooner as presiding officer for the remainder of the meeting and announced a recess until four o'clock.

At four o'clock the President, *pro tem.*, declared the polls closed, and the ballot committee proceeded to assort and count the votes, its chairman, Mr. Wilder, reporting the result of the ballot to the meeting.

The President, *pro tem.*, declared the following named persons to be the duly elected officers of the Society for the year 1906:

President,	Arthur F. Estabrook.
Vice-President (for two years),	Walter Hunnewell.
Treasurer,	Charles E. Richardson.
Secretary,	William P. Rich.
Trustees, (for three years),	Oakes Ames.
	Charles F. Curtis.
	William H. Elliott.
	Arthur H. Fewkes.
Trustee, (for two years),	John Lawrence.
Nominating Committee,	James H. Bowditch.
	Robert Cameron.
	T. D. Hatfield.
	Charles W. Parker.
	William H. Spooner.

He also declared that the eight proposed amendments to the By-laws had all received the necessary two-thirds vote in their favor and were adopted.[1]

The meeting was then adjourned.

William P. Rich,
Secretary.

[1] For a record of the amendments adopted see pages 116, 117, 120.

NECROLOGY, 1905.

NECROLOGY, 1905.

Charles H. Souther died at his home in Jamaica Plain, Massachusetts, January 4, 1905.

He became a member of the Society in 1895 and was a frequent exhibitor of plants and flowers at its exhibitions.

Hon. William Claflin, a member of the Society since 1867, died in Newtonville, Massachusetts, January 5, 1905, at the age of eighty-seven.

Mr. Claflin was born in Milford, Massachusetts, March 6, 1818. He was engaged for many years in the wholesale boot and shoe business in Saint Louis and Boston, and was actively interested in public affairs, serving several terms in the Legislature of Massachusetts between the years 1848 and 1860, and was elected Governor of the state in 1869. He served also two terms as representative to Congress in 1876 and 1878.

He possessed a beautiful estate at Newtonville, where he made his summer home, and took much pride in its horticultural adornment.

Lucius G. Pratt died at his home in West Newton, Massachusetts, February 6, 1905, at the age of eighty years. He became a member of the Society in 1871.

Mr. Pratt was born in Brattleboro, Vermont, May 3, 1824. He was actively engaged in business in Boston for many years, retiring in 1870. In the later years of his life he devoted himself to the management of various financial enterprises and was also actively interested in the affairs of his town and as a trustee of charitable institutions.

George W. Weld of Newport, Rhode Island, a member of the Society since 1883, died February 14, 1905.

Walter Russell of Arlington, Massachusetts, joined the Society in 1862 and from that date to the year of his death was

actively engaged in its work. He was a member of the Committee on Vegetables from 1867 to 1883 and from 1895 to 1904, a service of twenty-seven years, and was also a member of the Committee of Arrangements for several years.

He was a constant contributor to the exhibitions of the Society of fruits and vegetables from his extensive farm in Arlington, and with his practical experience his services as a judge were of great value to the Society and were much appreciated by his fellow members on the committee.

Mr. Russell was born in Charlestown, Massachusetts, September 10, 1831, and died at his home in Arlington, February 21, 1905, at the age of seventy-four years.

Hon. George Sewall Boutwell, an Honorary Member of the Society since 1851, died at his home in Groton, Massachusetts, February 27, 1905.

Mr. Boutwell was born in Brookline, Massachusetts, January 28, 1818, and from a humble beginning, by the strength of his character and the force of his mental ability, was called to high offices in the service of his state and nation. He was Governor of Massachusetts in 1851 and 1852; was appointed Secretary of the Treasury by President Grant in 1869; and was elected to the Senate of the United States in 1873, continuing until 1877.

Always interested in agricultural matters he rendered efficient aid in the establishment of the Massachusetts State Board of Agriculture which was organized during his administration as Governor.

Henry Ranford Reed, a member of the Society since 1899, died in New York, March 14, 1905.

Mr. Reed was born in Chelmsford, Massachusetts, August 23, 1837. He came to Boston at the age of eighteen years and entered into the grocery business, afterward becoming identified with the firm of Nash, Spaulding & Co., sugar refiners, of which firm he was the senior partner at the time of his death.

J. Philip Rinn was elected to membership in the Society in 1882. He was born in Germany, August 21, 1837, and died in Boston, March 17, 1905.

Mr. Rinn was a prominent architect of Boston, and among his creations in this vicinity are the Goddard Chapel Building of Tufts College and the residence of Francis B. Hayes at Lexington, a former president of this Society.

William Paul, a Corresponding Member of the Society since 1875, died at his home at Waltham Cross, Herts, England, March 31, 1905.

Mr. Paul was born June 16, 1822, at Church-gate, Cheshnut, England, where his father had established a garden in 1806. He succeeded to his father's business in 1847 and afterward removed to Herts, where he established in 1860 the celebrated Waltham Cross Nurseries, extending the business enormously. He was especially interested in roses and among the novelties he introduced the Magna Charta is the best known in this country.

To the world at large Mr. Paul was fully as well known as an author and writer on horticultural subjects. He published books on rose culture and on general gardening and was an interesting and instructive contributor to the horticultural press.

William Sturgis Hooper Lothrop of Boston died in Ponce, Porto Rico, April 5, 1905, at the age of thirty-four years. He was elected a member of the Society in 1896.

John Parker, formerly of Roxbury, Massachusetts, died in Newtonville, April 16, 1905, at the age of eighty-nine years. He became a member of the Society in 1864.

Mr. Parker was born in Charlestown, Massachusetts, December 4, 1815. On the death of his father when he was seven years old he went to live with a farmer in South Reading (now Wakefield), where he remained until he was fourteen. He then entered the home of Samuel Williams of Roxbury as an apprentice to learn the gilder's trade, and was in the employ of Williams & Everett over sixty years.

While steadily attending to his business he spent many hours in his garden, raising fruits and flowers, and exhibited at Horticultural Hall many of his choicest productions. He took many prizes for his dahlias which he was especially fond of cultivating

and remarked once that he had raised them for over fifty years. He grew also and exhibited gladioli and pelargoniums as well as other garden flowers and was always very careful to keep his stock pure and choice.

He attended every exhibition of the Society when his health permitted and wanted to visit the Spring Exhibition just three weeks before his death and dressed to go, but he was not strong enough to do it and gave it up, much to his disappointment.

Much could be written of his love for his plants and flowers, his care in cultivating, and the pleasure he took in sharing with others. His was a beautiful, Christian life and it is a pleasure to think that he can gratify his every desire for the beautiful in the Heavenly life to which he has passed.

By Mrs. Henrietta M. Parker.

Henry Hill Goodell, President of the Massachusetts Agricultural College at Amherst, died April 23, 1905. He was elected a Corresponding Member of the Society in 1900.

Dr. Goodell was born in Constantinople, Turkey, May 20, 1839. He served in the War of the Rebellion in 1862–63, and on his return took up the profession of teaching, and in 1886 was appointed President of the Agricultural College, holding this position until his death. In January, 1904, he gave a lecture before the Society on "Trees, Flowers, and Fruits of the East."

Joseph Jefferson, an Honorary Member of the Society since 1895, died at Palm Beach, Florida, April 23, 1905.

Mr. Jefferson was born in Philadelphia, February 20, 1829. Widely known through his histrionic attainments Mr. Jefferson was much interested in horticulture and was a lover of the beautiful in nature as well as in art.

Warren Fenno, who died in Revere, Massachusetts, April 27, 1905, had been identified with the Society since 1877.

He was born in Revere, December 2, 1854, and always made his home there, becoming actively interested in later years in all matters pertaining to the affairs of his native town. He was the Town Clerk for many years and was an authority on the local

history of this locality. He was a fruit grower on a large scale for this part of the country and was a constant exhibitor of the products of his orchards at the exhibitions of the Society, taking many prizes as evidence of his skill and horticultural knowledge.

He had been a member of the Committee on Fruits since 1880, a period of twenty-five years, the present year as chairman, and was elected a Trustee of the Society at the last annual election.

Hon. John Ware Fletcher, who was elected a member of the Society in 1871, died in Boston, April 27, 1905.

He was born in Norridgewock, Maine, in 1824, and at an early age started in business in Bangor, later removing to Boston where he was engaged in the insurance business for many years. He was a captain in the army in the early years of the Civil War and was twice elected Mayor of Chelsea, Massachusetts, 1871–72.

Hon. Robert W. Furnas of Brownville, Nebraska, a Corresponding Member of the Society since 1875, died June 1, 1905. He was President of the Nebraska State Horticultural Society from 1877 to 1883 and was Governor of the state in 1873–74. He came to Nebraska from Ohio in 1855 and was a pioneer in the development of the horticultural and agricultural interests of the great Northwest.

Joshua Montgomery Sears of Boston, a member of the Society since 1881, died at his summer home in Southboro, Massachusetts, June 2, 1905. Mr. Sears was born in Yarmouth, Massachusetts, December 25, 1854.

In addition to many other interests he took pleasure in horticultural matters, and the exhibitions of the Society were frequently enriched by the choice and rare productions of his greenhouses and gardens at Southboro.

Robert Charles Winthrop, Jr. died at his home in Boston, June 5, 1905, at the age of seventy-one years. Mr. Winthrop became a member of the Society in 1890. He was the son of the late Hon. Robert C. Winthrop, an early Honorary Member of the Society.

Francis Wesley Hunt was elected a member of the Society in 1892. Mr. Hunt was born in Readfield, Maine, July 26, 1833, and died at his home in Melrose, Massachusetts, June 24, 1905. He descended from a family of agriculturists, and no doubt his interest in all things pertaining to this Society was the natural outcome of his early surroundings.

He was interested in his fruit trees and his garden and never a season went by but he had many hundred aster plants, which were without doubt his favorite flower. He took great pride in keeping his home place always attractive, adorning it with many plants and shrubs.

By Francis A. Hunt.

Michael Sullivan died at his home in Revere, Massachusetts, July 4, 1905, at the age of sixty-five years.

Mr. Sullivan joined the Society in 1899. He was born in Ireland in 1840 and came to this country when a boy, making his home in Revere and engaging in the market gardening business which he followed successfully the rest of his life. He was prominent in the affairs of his town, serving as a member or chairman of the board of selectmen for a number of years. He was a member of the Committee on Vegetables for the years 1902, 1903, and 1904, the last year as its chairman, and was a Trustee of the Society in 1904.

Horace B. Taylor, an old-time Boston merchant, and a member of the Society since 1860, died in Boston, July 17, 1905, in his ninetieth year.

Mr. Taylor was born in Newfane, Vermont, August 25, 1815, coming early in life to Boston to engage in business pursuits; and for many years the firm of Foster & Taylor was prominently identified with the business interests of the city.

Leander M. Haskins of Rockport, Massachusetts, died at his home in that town, August 1, 1905, at the age of sixty-four. He became a member of the Society in 1904.

Mr. Haskins was a graduate of Dartmouth College in the Class of 1862 and later entered into business in Boston in which he was very successful. He owned a fine estate at Rockport and was much interested in its horticultural improvement.

Rhodes Lockwood of Boston, a member of the Society since 1883, died August 3, 1905, at the age of sixty-five.

Mr. Lockwood was born in Charlestown, Massachusetts, in 1839. He was connected with the Davidson Rubber Company for many years. He had a fine estate in East Lexington where he made his summer home.

Frederick C. Moseley of Dorchester, Massachusetts, died August 9, 1905. He became a member of the Society in 1900.

Hon. Timothy Thompson Sawyer, a member of the Society since 1854, died at his summer home in Magnolia, Massachusetts, September 4, 1905, at the age of eighty-eight years.

Mr. Sawyer was born in Charlestown, Massachusetts, January 7, 1817, and was for many years engaged in business in Boston. He was Mayor of Charlestown in 1855, 1856, and 1857, State Representative in 1857, and Senator in 1858. He filled also many other offices of trust of a public and private nature. He was much interested in the antiquities of his native city and was a recognized authority in matters concerning its history.

Francis Howard Peabody of Boston died at his summer home in Beverly, Massachusetts, September 22, 1905, at the age of seventy-four. He was elected a member of the Society in 1893.

Mr. Peabody was born in Springfield, Massachusetts, October 9, 1831. He came to Boston at the age of sixteen and entered the banking office of John E. Thayer & Brother, to which firm he and his partners succeeded in 1865, under the name of Kidder, Peabody & Co., establishing a business of world-wide reputation.

He was a patron of the fine arts and the natural sciences, and his helpful interest was often manifested in a practical and substantial manner.

Edwin F. Locke died in Amherst, New Hampshire, October 3, 1905. He joined the Society in 1901.

Mr. Locke was born in Charlestown, Massachusetts, January 9, 1847. Early in life he went to work for his father in Faneuil Hall Market, Boston, and for forty years, up to the time of his

death, was associated with the firm of Isaac Locke & Company in the fruit and produce business.

John Capen of Boston, another of the older members of the Society, died October 7, 1905, at the age of eighty-seven years. He was admitted a member in 1865. He was born in Sterling Massachusetts, September 8, 1818.

Calvin W. Smith of Grantville, Massachusetts, a member of the Society since 1880, died October 21, 1905.

Joshua C. Stone who died in Watertown, Massachusetts, October 22, 1905, was elected a member of the Society in 1894.

Mr. Stone was born in Watertown, May 8, 1835, and lived there all his life. He was a well-known market gardener and was much interested in the work of the Society, serving as a member of the Committee on Vegetables from 1899 to the time of his death. He took a prominent part in the meetings for the discussion of horticultural subjects and from his broad experience in practical work added much to the value of these gatherings.

Rev. H. Honywood D'Ombrain, a Corresponding Member of the Society since 1875, died at Ashford, Kent, England, October 23, 1905, in his eighty-eighth year.

Mr. D'Ombrain was born in Canterbury, England, May 10, 1818. In addition to his duties as a clergyman he was devoted to horticultural pursuits, and not only grew plants successfully but wrote about them interestingly and instructively. He was one of the founders of the National Rose Society and was for many years editor of the Rosarian's Year Book. He was also editor of the Floral Magazine during its existence.

Denys Zirngiebel died at his home in Needham, Massachusetts, November 16, 1905, at the age of seventy-seven. He had been a member of the Society since 1862.

Mr. Zirngiebel was born in Neufchatel, Switzerland, in 1829, and came to this country in 1855 where he soon after took charge of the Botanical Garden of Harvard University at Cambridge, and in 1864 established himself in business at Needham.

He was an expert horticulturist and a frequent exhibitor of his productions at the exhibitions of the Society. He was a member of the Committee on Plants and Flowers in 1866.

Mr. Zirngiebel was greatly interested in the carnation and was one of the earliest cultivators of the new creations of the French horticulturist, Alegatière, which were introduced into the United States about the year 1871. The most prominent among these were the Alegatière, red, La Purité, deep pink, and Mme. Carle, white. These were the best of their class at that time but were soon superseded by American raised seedlings.

Sometime during the 70's he introduced from France several new strains of pansies; the Bugnot, Cassier, and Trimardeau varieties. He was also one of the first to introduce the so-called French cannas and did much to popularize them, and was undoubtedly the first to import the Italian or Dammann varieties.

All new and improved varieties of plants were of great interest to him and many were tested at the earliest opportunity. A great many varieties of less importance than these mentioned, but all useful in their way, were first grown in the vicinity of Boston by him. He took great interest in asters, also, and was a pioneer in growing them in large quantities for the market. The strain known as Zirngiebel's White was of his own originating.

By Arthur H. Fewkes.

Francis Skinner, a member of the Society since 1864, died at his home in Boston, November 24, 1905. He was graduated from Harvard in the Class of 1862 and was a prominent merchant in Boston in the dry goods commission business. He was interested in the fine arts and in horticulture, and for many years was a regular exhibitor of the products of his gardens and greenhouses at the exhibitions of the Society.

Edward Atkinson, a member of the Society since 1865, died at his home in Brookline, Massachusetts, December 11, 1905, at the age of seventy-nine.

Mr. Atkinson was born in Brookline, February 10, 1827. He was greatly interested in matters of social and political economy and was a frequent contributor to the literature of these subjects.

Frederick William Burbidge, m. a., Curator of Trinity College Botanical Garden, died in Dublin, Ireland, December 24, 1905. He was elected a Corresponding Member of the Society in 1898.

Mr. Burbidge was born in Wymeswold, Leicestershire, England, March 21, 1847, and from boyhood was interested in natural history studies. After several years experience at the Kew Gardens he was appointed Curator of the Dublin Garden, a position he filled for twenty-six years.

In 1877 and 1878 he traveled in Borneo and other islands of the East Indian Archipelago in a search for botanical and horticultural novelties. The account of this eastern journey is interestingly recorded in his Gardens of the Sun, published in 1880. He wrote also several other books, the last being The Book of the Scented Garden, published the present year. He was an accomplished artist, botanist, and horticulturist, as well as an author, and made many valuable contributions to scientific and horticultural literature.

OFFICERS, COMMITTEES, AND MEMBERS, 1905.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1905.

President.

ARTHUR F. ESTABROOK, of Boston.

Vice-Presidents.

WALTER HUNNEWELL, of Boston.
ROBERT T. JACKSON, of Cambridge.

Treasurer.

CHARLES E. RICHARDSON, of Brookline.

Secretary.

WILLIAM P. RICH, of Chelsea.*

Trustees.

OAKES AMES, of North Easton.
WILLIAM N. CRAIG, of North Easton.
GEORGE F. FABYAN, of Brookline.
JOHN K. M. L. FARQUHAR, of Boston.
WARREN FENNO, of Revere.
ARTHUR H. FEWKES, of Newton Highlands.
ARTHUR D. HILL, of Boston.
J. WOODWARD MANNING, of Reading.
CHARLES W. PARKER, of Boston.
JOHN A. PETTIGREW, of Boston.
CHARLES S. SARGENT, of Brookline.
WILLIAM H. SPOONER, of Jamaica Plain.

Nominating Committee.

OBADIAH B. HADWEN, of Worcester.
JOHN LAWRENCE, of Groton.
HENRY S. HUNNEWELL, of Wellesley.
HENRY P. WALCOTT, of Cambridge.
JAMES WHEELER, of Brookline.

*Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

COMMITTEES FOR 1905.

Finance Committee.

WALTER HUNNEWELL, *Chairman.*
ARTHUR F. ESTABROOK, GEORGE F. FABYAN.

Committee on Prizes and Exhibitions.

J. K. M. L. FARQUHAR, *Chairman.*
WILLIAM N. CRAIG, ARTHUR H. FEWKES, JOHN A. PETTIGREW,
WARREN W. RAWSON, WILLIAM H. SPOONER.

Committee on Plants and Flowers.

ARTHUR H. FEWKES, *Chairman.*
ROBERT CAMERON, WILLIAM N. CRAIG, WILLIAM NICHOLSON,
JAMES WHEELER.

Committee on Fruits.

WARREN FENNO, *Chairman.*
CHARLES F. CURTIS, J. WILLARD HILL.

Committee on Vegetables.

WARREN W. RAWSON, *Chairman.*
WARREN H. HEUSTIS, JOSHUA C. STONE.

Committee on Gardens.

OAKES AMES, *Chairman.*
GEORGE BARKER, WILLIAM N. CRAIG, ARTHUR F. ESTABROOK,
ARTHUR H. FEWKES, CHARLES W. PARKER, JOHN A. PETTIGREW,
WILLIAM P. RICH, HENRY P. WALCOTT.

Library Committee.

CHARLES S. SARGENT, *Chairman.*
T. OTIS FULLER, SAMUEL HENSHAW, CHARLES W. JENKS,
HENRY P. WALCOTT.

Committee on Lectures and Publication.

J. WOODWARD MANNING, *Chairman.*
JAMES H. BOWDITCH, ROBERT T. JACKSON, EDWARD B. WILDER,
E. W. WOOD.

Committee on School Gardens and Native Plants.

HENRY SAXTON ADAMS, *Chairman.*
CHARLES W. JENKS, WM. E. C. RICH, WM. P. RICH,
MISS MARY RODMAN.

MEMBERS OF THE MASSACHUSETTS HORTICULTURAL SOCIETY, 1905.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following lists are inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Sir Trevor Lawrence, President of the Royal Horticultural Society, London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Director of College of Agriculture, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président da la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.
Napoleon Baumann, Bolwiller, Alsace.
D. W. Beadle, 307 Givens St., Toronto, Ontario.
Professor William J. Beal, Agricultural College, Michigan.
Prosper J. Berckmans, Ex-President of the American Pomological Society, Augusta, Georgia.
Charles E. Bessey, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.
Dr. Ch. Bolle, Berlin, Prussia.
Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.
Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia.
Sir W. T. Thiselton Dyer, K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.
Parker Earle, President of the American Horticultural Society, Roswell, N. M.
George Ellwanger, Rochester, N. Y.
H. J. Elwes, F. R. S., Colesborne, Cheltenham, England.
William G. Farlow, M. D., Professor of Cryptogamic Botany, Harvard University, Cambridge.
B. E. Fernow, Forestry School, Cornell University, Ithaca, N. Y.
Beverly T. Galloway, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D. C.
Charles A. Goessmann, Ph. D., L. L. D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.
George L. Goodale, M. D., Professor of Botany, Harvard University, Cambridge.
Obadiah B. Hadwen, President of the Worcester County Horticultural Society, Worcester.
Professor Byron D. Halsted, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.
Professor Carl Hansen, of the Royal College of Agriculture, Copenhagen, Denmark.
J. H. Hart, Superintendent of the Botanic Garden, Trinidad.
Dr. F. M. Hexamer, Editor of the American Agriculturist, New York.
J. W. Hoffmann, Colored State University, Orangeburg, S. C.
J. C. Holding, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.
Sir Joseph Hooker, K. C. S. I., The Camp, Sunningdale, England.
Sir George King, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.
Professor William R. Lazenby, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.
Max Leichtlin, Baden-Baden, Germany.

Victor Lemoine, Nancy, France.
Dr. Peter MacOwan, Government Botanist, Cape Town Herbarium, Cape Town, Africa.
Dr. Maxwell T. Masters, Editor of the Gardeners' Chronicle, London.
George Maw, Benthal, Kinley, Surrey, England.
T. C. Maxwell, Geneva, N. Y.
F. W. Moore, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.
Sir Daniel Morris, C. M. G., D. Sc., M.A., F. L. S., Imperial Commissioner of Agriculture, Barbados.
George Nicholson, Kew, England.
Peter Novik, Secretary of the Norwegian Horticultural Society, Christiania.
Professor D. P. Penhallow, Director of the Botanic Garden, Montreal, Canada.
P. T. Quinn, Newark, N. J.
Cavalière Enrico, Ragusa, Palermo, Sicily.
D. Redmond, St. Nicholas, Florida.
S. Reynolds, M. D., Schenectady, N. Y.
Benjamin Lincoln Robinson, Ph. D., Curator of the Gray Herbarium of Harvard University, Cambridge.
William Robinson, Editor of Gardening Illustrated, London.
William Salway, Superintendent of Spring Grove Cemetery, Cincinnati, O.
Edgar Sanders, Chicago, Ill.
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Williams, Philander, Taunton.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winsor, Robert, Weston.
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Woodberry, Miss E. Gertrude, Cambridge.
Woodbury, John, Lynn.
Wright, George C., West Acton.
Wright, John G., Brookline.
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Grey, Thomas J., Chelsea.

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